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THE naval appropriation bill, as it finally passed Congress, authorizes the building of three new ships only. These are all to be of the same class, light-draught gunboats of about 1,200 tons displacement and 17 or 18 knots speed, to cost not over $400,000 each. The bill also appropriates $200,000 for building a submarine torpedo boat and conducting experiments with it.

THE survey of a proposed railroad line from Vancouver, B. C., to Cape Prince of Wales, Alaska, has been finished. The route, it is said, was found easy to Juneau, and, while heavier grades will be encountered from there on, they will not be excessive. The object of this proposed road is to form an all-rail line, through future Siberian and Russian connections, with Europe. Behring Strait, at Cape Prince of Wales, is 26 miles wide, and this distance, it is said, can be bridged. In our opinion, however, it will be many years before such a road is needed or completed. This is especially the case, as the Siberian Railroad, now under construction, will end at Vladivostok, on the Japan Sea, and to carry it to Behring Strait will require 1,000 miles of road, crossing two mountain ranges and running through an utterly desolate country.

THE Caminetti bill, which will allow the resumption of work on those hydraulic mines which do not empty their débris into a navigable stream and those whose tailings may be restrained, has become a law, it having passed Congress and having been signed by the President. This will allow the greater number of mines in California to resume operations; a few however, so situated that the tailings cannot be impounded, must remain idle. It is likely that many mines on the watershed of the San Joaquin and in El Dorado, Placer, Tuolumne, Calaveras, Nevada, Sierra and Plumas counties and also in Shasta County, on the Sacramento River watershed and in the laterally extending cañons of the Sierras will soon take active measures to resume work. Some of the mines, it is said, will commence operations immediately, the penal clause of the bill not taking effect until May 1, but as not over two months more of water can be counted upon at present it does not seem probable that extended hydraulicking will be done until next winter, when fully 75 per cent. of the hydraulic mines of the State will be in operation.

The Caminetti bill provides for an appropriation of only $15,000, to pay the expenses of the commissioners in charge of the work, but if the Ford bill, which has passed the State Senate and now awaits the Assembly's and Governor's action, becomes a law, money will be appropriated to aid these companies in constructing restraining dams—which would seem to us a purely private enterprise, in which the State or Government had no part. While we sympathize with hydraulic miners in California who, for many years, have been obliged to suspend operations and let great invested capital remain idle, we do not believe it to be a wise or just precedent that the people at large should be taxed to permit private or corporate enterprises to earn a profit.

The laws of the United States have been so construed by eminent jurists as to read that neither farming lands nor navigable streams shall be defiled by large quantities of débris, which would render either unfit for its purpose. The only remedy at that time available, the closing down of the mines, was enforced. And the resumption of work on a large scale will be possible only through the provisions of some such law as the Caminetti act, which appoints a commission to determine the navigability of streams, the fitness of land for farming purposes, and in whose hands the authority to permit hydraulicking operations is vested. But the appointment of this commission does not nullify existing law; it is to symplify its workings. The law still exists and must be obeyed. And that the law is obeyed, in every particular, rests not with the people but with the mining companies.

THE Bradstreets Company some years ago began to examine the records of each of the eleven or twelve thousand failures that occur annually in the United States and Canada, not only to determine the accuracy of its credit ratings, but to ascertain the primary causes. It is the latter determinations that are of the greatest interest. The causes seem to vary with the locality, as if climatic or social influence had a part in determining the success or failure of a business enterprise.

The primary causes of failing have been divided into the following heads: A.—Causes due to faults of those failing: I. (1) Incompetence (irrespective of other causes); (2) inexperience without other incompetence; (3) lack of capital, or the reverse, *i. e.*, trying to do too much business for capital employed: and (4) unwise granting of credits. II. Neglect of business: (1) Speculation (outside regular business); (2) neglect (due to doubtful habits); (3) personal extravagance. III. Fraudulent disposition of property. B.—Causes not due to fault of those failing. IV. Disaster (floods, fire, crop failure, commercial crisis). V. Failure of others (of perfectly solvent debtors). VI. Special or undue competition.

The determination of the class to which each of ten to twelve thousand failures belongs is a difficult matter, and it is recognized that perfect accuracy cannot be attained; but that these figures are correct and useful within certain limits there is no doubt.

In the three years this system has been in operation, the chief primary cause of failure has been insufficiency of capital. The percentage of failures due to this cause varies from 32·5 per cent. in 1892 to 39·2 per cent. in 1891. This cause has prevailed more in the Middle, Southern, Western, Northwestern and Pacific States than in the more settled Eastern States, where capital can be easily secured.

Incompetency is the second greatest factor, 18·6 per cent. of the failures in 1892 being due to that cause. It is found, strange to say, that more failures due to this cause occur in the Eastern States, which we have long regarded as centers of education and ability, than in any other division of the United States, the only one approaching it in this respect being the Pacific States. Neglect is a minor factor, three per cent. failing from this cause in 1892, the greatest proportion of them in the Northwestern States and the territories In the more steady Eastern and Middle States few failures occur from lack of experience, while in the Southern, Western and Pacific States, and territories where any business is in a comparatively new country, the percentage is greater.

Unwise credits are far from being the rule in the Eastern and Middle States, but the Westerner suffers from this liberality. Speculation was responsible for 1·9 per cent. of the failures of 1892, the proportion to each division of States being nearly equal.

Personal extravagance, which is responsible for only 1·4 per cent. of the failures as a whole, did not seem to affect anybody seriously except in the territories, where the percentage was doubled.

The number of failures due to fraud has increased, the percentage in 1890 being 3·9 per cent., in 1891, 7 per cent., and in 1892 10·3 per cent. The greatest proportional number of failures due to this source occurred in the territories, although the Southern and Eastern States ran them a close race. Competition and the failures resultant from it were greatest in the Middle States, and there were substantially none in the sparsely settled territories. Disaster during the past years affected mainly the Southern States, where the cotton crops were a financial failure, and the Middle States, whose cereal products brought low prices; 19·2 per cent. of the failures in 1892 were based upon this cause as against 12·7 per cent. n 1890 and 16·5 per cent. in 1891.

In the thorough and complete records kept by the Bradstreet Company it is shown that in 90·5 per cent. of the failures of 1892 the capital invested was $5,000 or less, and that 93 per cent. of those failing have no commercial rating or a small one. This shows conclusively the value of the Credit Bureau system, and when these figures are compared with those of previous years the increased reliability of the returns can be appreciated.

It would be extremely interesting could such a system be applied to the analysis of our mining failures, but we fear that it is impracticable, however useful.

THE CONVERSION OF THE "BULLETIN."

The *Bulletin* of the American Iron and Steel Association, JAMES M. SWANK, editor and publisher, in its issue of February 15th, 1893, has the following very interesting editorial note :

"It is announced that a numerously signed petition is being prepared and will be sent to Congress asking the repeal of the duty of four cents per pound which, under the McKinley Act, is to be laid on all importations of pig tin after July 1st, 1893.

"As the Temescal and Harney Peak tin mines have not justified the expectations which were entertained of them when the McKinley tariff was passed, and as we have, in fact, no tin industry to protect, there is no reason why the duty on pig tin should be imposed. We hope that it may be possible for the present Congress to pass a joint resolution providing for its repeal."

The Temescal and Harney Peak mines have not justified the expectations which were entertained of them when the McKinley tariff was passed ! Excuse us, neighbor, but they have more than justified the expectations of those who knew them.

We trust that the note in the *Bulletin* is indicative of a change of heart in its learned editor, and that under its benign influence he may eventually be brought to admit all raw materials free, and reduce the tariff on some manufactured articles.

In the mean time we beg him to accept our sympathy. It is indeed rather discouraging that an ideal protective tariff should have been incapable of putting tin in the pockets of lean ore in California and Dakota, while it has filled to overflowing the pockets of many millionaires with good gold.

THE POSITION OF ALUMINUM.

The "Engineering News," in its issue of February 16th, 1893, says that we have "discussed most unfairly and misleadingly" the position of aluminum in our issue of February 4th, 1893. Not content with this criticism our excellent contemporary goes on to say that "the general purport of his article is to encourage and delude with false hopes those who are striving after some process of extracting aluminum from clay or some cheaper method of producing the metal than the present."

We have not been in the habit of deluding the public by false hopes of any kind, and we certainly have not done so in this case. We are always ready, however, to encourage search for cheaper methods of producing this or any other article of common or uncommon use.

Our friend quotes an estimate of the theoretical cost of one pound of aluminum at 20 cents.

The *theoretical cost* has nothing to do with the matter, except in so far as it enables us to see how much the actual cost exceeds it. There was once a certain blast furnace built by some real estate boomers in the South, and they had figured out to their entire satisfaction that the cost of pig-iron made in their furnace would be $9 per ton. Iron was then selling for $13 per ton f. o. b. furnace, and they all thought it was a lovely thing to go into. They ran that furnace several months, and the assignees then found that the iron had cost $18 per ton. Unless we are greatly mistaken, the actual cost of aluminum bears about this same ratio to its theoretical cost. We will rejoice as sincerely as any one can when 20 cent aluminum becomes a commercial fact, but in the meantime we shall not fail to encourage all of those who seek to cheapen the metal still farther, by electrolysis, direct reduction or any other method.

Our friend remarks that the probable future price of aluminum will not exceed 15 cents per pound, under the electrical process, provided manufacturers are forced to it by competition. What is to cause the competition? Evidently some cheaper process.

To say that the direct reduction of aluminum from its ores is an "ignis fatuus," and that those who urge upon experimentors the need of careful and prolonged search in this direction are deluding them with false hopes is to forget the many so-called impossible achievements that are now parts of our common heritage. There is scarcely a successful metallurgical operation to-day that did not meet in its early youth the mournful chorus, "It can't be done." It was sung over the cradle of the Bessemer steel industry in 1856, repeated with added gloom at the christening of the Thomas process in 1879, and embellished with many notes of sorrow at the first airing of the Bessemer or Manhès process for treating copper mattes 10 years ago. It is an ancient ditty, but from too frequent repetition and increasing enlightenment of the audience, it has lost its old charm and is used only by those who are too lazy to think or too feeble to work. Direct reduction? Yes, surely. For when an ore is intimately mixed with carbon, let us say, and brought to the temperature corresponding to its decomposition, and there is loss of carbon and proportional gain of metal, that is direct reduction, no matter what may have been the source of heat.

Up to the present time the only practical source of heat sufficient to enable the carbon to combine with the oxygen in the alumina in order that the metal may be liberated is the electric current. We term the process electrical, no matter whether it is really electrolytic or electro-chemical, whether the current acts through a fused bath or directly upon the mixture of ore and carbon.

We have no hesitation in saying that it would be a difficult thing to decide between some of the so-called electrical processes and direct reduction. The patent lawyers may be able at a glance to discern the essential differences, but to the metallurgist they are by no means so clear.

It remains to be seen whether electrical processes, pure and simple, can bring aluminum into active competition with copper, tin and zinc. They have not done so yet, but it is quite possible that they may yet do a great deal more than they have done. It is also quite possible that these processes may find themselves assailed from the outside by methods not strictly electrical. We make no assault upon electrical processes; we merely say that they must make cheaper aluminum, or some other process will.

WHO NAMED "OLD FAITHFUL"?

The following letter appeared in the New York *Sun* of March 6th :

TO THE EDITOR OF THE *Sun*—*Sir :* You tell us that earthquake shocks have been felt lately in the Yellowstone Park, and that the people who are lucky enough to be in that charming place are alarmed. In fact, earthquake shocks are no novelty in the Yellowstone, and I suppose that they are felt there with greater or less severity every year. I knew of two in 1871. One of them woke me at night as I was sleeping on the ground, and I distinctly remember the tinkle of the hammer of my rifle against the bottle of snake medicine which lay beside it on the ground; and the sensation of motion was much like that which you feel when a horse shakes himself under you. I am sure that the snake medicine had nothing to do with the sound or sensation.

Right here I wish to enter a claim which I have never before made in public. I believe that I named the geyser known as "Old Faithful." I was in the Yellowstone country in 1871 as topographer of Colonel BARLOW'S expedition, sent out by the Engineer Bureau of the War Department, and at that time measured the height of Old Faithful's jet and named him. If anybody else wishes to claim the distinction let him do it now, or forever after hold his peace. Otherwise, with the help of the *Sun*, my name will "go thundering down the ages" along with those of HOKE and DINK and ABE and thousands more whom you have saved from oblivion.

NEW YORK, March 4. H. G. PROUT.

Notwithstanding the feeble jocosity of the concluding sentence, I presume that the rest of the letter is seriously intended, and that the claim advanced by Mr. PROUT is one in which he honestly believes. For a mere falsehood is not *per se* a joke. It takes more than a lie to make a hoax; and if Mr. PROUT were merely amusing himself by a conscious misstatement of facts, he would be not amusing, but boring and irritating everybody else. Nor is it a matter of great importance who named the "Old Faithful" geyser. It is not to settle a point so trivial that I write this

article, but rather to call attention to Mr. PROUT'S letter (assuming it to be serious) as a striking example of the part which imagination plays in the operations of memory, and the untrustworthy character of reminiscences, unsupported by contemporaneous evidence. From this standpoint, the letter above quoted becomes a convenient text, justifying an amount of comment which its intrinsic importance might not warrant.

1. Mr. PROUT'S statement concerning earthquakes in the region now known as the Yellowstone National Park is quite correct. I remember very well the one he mentions, which occurred in the night; for I was standing guard that night, in the camp of my own party, at the outlet of Yellowstone Lake. The earthquake waked up one of my sleeping comrades, but not the rest; and those who had slept through it were incredulous, the next morning, of my story concerning it, only partially corroborated, as it was, by the one witness who had not been thoroughly awake until the brief shock was over. We subsequently compared notes with a member of Dr. HAYDEN'S party, then camped some miles away, and, finding that they had experienced an earthquake at the same hour, our doubters were convinced. Mr. PROUT'S recollection (or notebook) is further confirmed by mine, through the circumstance that, on the following day, we encountered BARLOW'S party, to which, as he says, he was attached. Our communication with them was slight, consisting only in shouting back and forth across the Yellowstone River, on the opposite banks of which, above the Lower Falls and the Grand Canyon, the two expeditions were traveling. As they had been camping, on the night of the earthquake, nearer to us than the HAYDEN party, I have no doubt that the shock to which Mr. PROUT refers is the one felt by that party and by mine. We exchanged with them, however, no remarks concerning either earthquakes or geysers, but only a few general greetings, like the signals of ships at sea, after which we went our separate ways.

2. So far, it will be seen that the accuracy of Mr. PROUT'S recollection is fully confirmed. Indeed, a man is scarcely likely to be honestly mistaken about an earthquake which happened to himself, unless he has been through a great many. But at the moment when, for the first and only time, my party thus slightly touched the orbit of the BARLOW party, I had in my notebook a record of observations made upon "Old Faithful," with that name written over it. Certainly I had not obtained it from Mr. PROUT or any of his party. Quite as certainly, I had not invented it. The natural inference is that both of us got it from a common source. And if there were no further evidence in the case, the question might remain undecided forever, like many others concerning which, apart from issues of veracity, the recollections of men are in conflict. I have taken the trouble, however, to check my own recollections and even my written *memoranda*, by reference to documentary proofs, easily accessible, and the result, as will be seen, is entirely conclusive.

3. But before I state it, let me observe in passing that the form of Mr. PROUT'S challenge is inadmissible in the court of historical inquiry. No man has a right to wait for more than 20 years before asserting a claim to priority, and then (when the chances are that those who could have contested it are out of the way) to promulgate it for the first time, and demand that it be accepted, not on the strength of positive proof, but in the absence of positive denial. Mr. PROUT'S challenge is equivalent, in fact, to the declaration that he has no proof, but only a belief, and that he considers the petty distinction in question as a claim unlocated, which he proposes to record, unless a prior locator turns up. This may do for mining claims, but it is not the law governing the recognition of priority in geographical exploration or nomenclature, as Mr. PROUT, being the professional topographer of a military expedition, should know very well.

4. The truth of this matter is easily demonstrated. LANGFORD'S expedition, which rediscovered and made known to the public the Yellowstone geysers (previously seen by one or two white men only), took place in the summer of 1870, and was described by him in an article on "The Wonders of the Yellowstone" which appeared in the numbers of May and June, 1871, of Vol. II. of the original "Scribner's Monthly" (afterward the "Century"). It was not only a year after the expedition itself, but some time after this publication, that the three parties of HAYDEN, BARLOW and myself entered the region. HAYDEN and BARLOW went from Bozeman, striking the Yellowstone River, following it up to the lake, and then cutting across to the geyser basins on Fire-Hole Creek, a tributary of the Madison. My party broke a new path, crossing the divide back of Virginia City, Mont., following the Madison some distance, then crossing by a low pass to Henry Lake, and thence by another pass to Fire-Hole Creek, which we followed up to the geyser basins. Afterward, we made our way through the forest to Yellowstone Lake and followed its outlet, the Yellowstone River, to the Falls and Canyon. Thus all these parties were in the region at the same time, and all were drawn thither by the account of LANGFORD'S expedition, already published.

Now that report, as contained in the magazine above mentioned, was accompanied with illustrations and descriptions of the leading geysers, and in the second article (June, 1871) "Old Faithful" is shown in maps and pictures, with its name duly printed thereon, and the text narrates the giving of the name and explains the reason for it. We carried with us, as a guide in our journey, a copy of the magazine containing these articles; and I have no doubt that the other parties did the same.

It thus appears that "Old Faithful" was named a year before Mr. PROUT ever saw it, and the fact that he gave it that name at all is strong evidence that he, or the commander of his party, had already seen this name attached to a picture and description of the geyser which it so appropriately characterizes.

The claim which Mr. PROUT now asserts, for the first time after 22 years, he will probably be glad to withdraw in view of the above evidence. By reading the articles to which I have referred, he can satisfy himself that the "Giant," "Giantess," "Beehive," "Castle," "Grotto" and other noteworthy geysers are also pre-empted beyond the reach of his recollection.

5. I assume and really believe that the groundless assertion thus refuted was sincerely uttered. The phenomenon is a familiar and instructive one. The most interesting instances of it, perhaps, arise in connection with the disputed authorship of fugitive poems, the dates of alleged inventions, and the reminiscences of military campaigns. In all these departments respectable and honest people are constantly asserting what is untrue. The late Colonel SCOTT, who was for many years the custodian and editor of the records of the war, was accustomed to say that the recollections of officers, unsupported by documentary evidence, were absolutely worthless as material for accurate history. He went so far as to say that, after the lapse of years, the commanders of regiments which had been in many actions could not correctly remember in which particular engagements or parts of engagements their forces had been actually employed, and that he had repeatedly confounded such honest but mistaken veterans by showing them their own official reports of the date in question, proving that they and their troops had been far away from the place where they now claimed they had been winning glory, and complained because the official history had left them out.

In short, PROUT'S case may well be a lesson, not only to PROUT, but to all of us.

R. W. R.

NEW PUBLICATIONS.

HOW TO MANAGE THE DYNAMO. By. S. R. Bottone. New York and London: Macmillan & Co. 60 pages, illustrated. Price 60c.

This is a little treatise written especially for the use of engineers who have to undertake the management of a dynamo for lighting or other purposes in addition to other duties. It gives brief accounts of different classes of dynamos and their construction; their defects and the best way to remedy them, and some useful hints about running them to the best advantage. A chapter giving definitions of electrical terms is added.

ELECTRICAL EXPERIMENTS. By G. E. Bonney. New York and London: Whittaker & Co. 252 pages, 144 illustrations. Price, 75c.

The author, who is a frequent contributor to the electrical periodicals, has written the book in response to suggestions and requests from correspondents, and his object has not been to make a treatise on electricity, but simply to show how electrical apparatus can be used for instruction and instructive amusement. The different chapters treat of magnetic experiments; of electromagnets; of induction coils; of static electricity; of electrolytic experiments, and of miscellaneous experiments. Incidentally there is much information on electrical matters, and there are many references to more elaborate works which will be useful to the student. The book seems to fill its place very fairly, although the field is a somewhat limited one.

ENGINEERS' SURVEYING INSTRUMENTS: THEIR CONSTRUCTION, ADJUSTMENT AND USE. By Ira O. Baker, C. E., Professor of Civil Engineering in the University of Illinois. Second Edition, revised and enlarged. New York: John Wiley & Sons. 392 pages, illustrated. Price, $3.

The first edition of this book was made up of notes prepared for lectures to the author's classes in civil engineering; the present second edition has been so revised and has received so many additions, as experience in the classroom has shown the necessity or expediency of changes, that it is practically a new book. The contents include chapters on the chain and tape; the tripod, leveling screws and plumb; the magnetic compass, the solar compass, the telescope, the transit, verniers, the plane table, telemeters, spirit levels, and barometers. An appendix contains chapters on local attraction in land and mining surveying and its correction; taking areas by traversing; and correction of probable errors. A number of problems for the student are also appended.

This list of contents will give an idea of the general character of the book. It is not intended to be a treatise on surveying, although a good many general instructions are necessarily given in connection with those on the use of instruments. The descriptions are generally concise; in several instances they might be made clearer by some additional illustrations, for of these the book is somewhat sparing. Those given, however, are generally good. The arrangement and indexing of the book is such as to make it convenient for reference, and it is, upon the whole, a handy test-boox either for a student or a working engineer.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.

Manual of Irrigation Engineering. By Herbert M. Wilson, C. E. Published by John Wiley & Sons, New York, 1893. Pages 351. Price $4.00. Illustrated.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

The Electrolytic Treatment of Gold and Silver Ores.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I should like to inquire of you whether there has been any process discovered for the reduction of gold and silver ores on a large scale by electricity. Do you know of any such process being in use? An answer to the above will greatly oblige,

MILWAUKEE, Wis., March 6th, 1893. THOMAS L. KENNAN.

(No successful electrolytic process for the direct reduction of gold and silver ores has yet been invented, although many attempts have been made. The use of electricity is confined so far to the treatment of products of other metallurgical operations.—Ed. E. & M. J.).

Detcrioration of Copper Wires Underground.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: During the course of a periodical examination of our mine, I was much startled by the inquiry made by the mine foreman as to whether I knew the cause of his leading-in wires rotting. These leading-in wires are ordinary wires laid from the battery, and from which they carry the current to fire the various charges in the mine. They are, of course, strongly insulated copper conductors.

I at first shook my head, said I didn't believe that it was so, and asked him what he meant. He stated the fact positively, that these wires were strong when they were first put in, and that after a year's service they were so rotten that he could easily break them by pulling between his two hands. I asked him for a sample, but he could not lay his hands on any at the time, saying that the last wire that was taken out had been thrown away, or destroyed.

I write now to ask whether you ever heard of such a thing, and, if you have, what you think would be the cause of the deterioration in strength of the copper.

There are so many odd yarns going the rounds of the miners in the course of their work underground, that it is hard to credit them. At the same time, this foreman has been in our employ a great many years, and I am inclined to credit his statements, rather more than I would the average run of miners. E. W.

(We do not know of any stable molecular change being introduced in copper by the electric current, but believe that this deterioration was due to purely chemical action. It is an interesting question and may be answered from the experience of other miners.—Ed. E. & M. J.)

The Crawford Crushing and Amalgamating Mill.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Your correspondent "T," in your issue of March 4th, makes an attack on the Crawford mill which is now being tested at the Lustre Mining Company's works in Durango, Mex. This was so evidently uncalled for and contrary to the facts, that the president of the Lustre Mining Company has written to this office the following letter, which we trust you will publish:

"THE LUSTRE MINING COMPANY,
"EL ORO, DURANGO, Mexico.

PITTSBURGH, March 7th, 1893.

"THE MECHANICAL GOLD EXTRACTOR COMPANY:

"Dear Sirs: We notice in the ENGINEERING AND MINING JOURNAL of the 4th inst. a communication by 'T.,' stating that he had heard of cases of the 'absolute failure of the Crawford mill in treating pyritic gold ores,' and cites our company, giving the first experimental run made. This we think very unfair to you, as you now know that by some oversight the machines sent us were very defective in their construction, so much so, indeed, that it was with difficulty that we were enabled to make them hold the water and quicksilver.

"We still believe that with the mechanical defects remedied and further experiment, particularly as to quantity of water and regulation of feed, the mill will successfully treat our ores. We propose that the mill shall have a full and fair trial, and regret that any one should condemn it as a failure on a first trial and under such circumstances.

(Signed) "LUSTRE MINING CO.,
"H. D. GAMBLE, President."

Permit us also to quote from a letter just received from the Powhatan Land and Mining Company: "We have no idea who could have inspired the article in the ENGINEERING AND MINING JOURNAL, nor how anyone could have made any statement derogatory to our Crawford mill, for up to the present time we are all well satisfied with the mill."

This may not correct the base impression already created by "T's" letter, but it will to some extent give a quietus to it.

We shall also be glad if you will find room for the subjoined extract from an article which, unprompted by us, has recently appeared in a Salt Lake paper, and incidentally referring to the work which has been and is being done by the Crawford mill on refractory ore at Gold Camp in Cane Springs district.

"I now come to what may, perhaps, be of more general interest to the mining world than the Gold Hill mines, and that is to the work done by the Crawford quartz mills. So many contradictory reports had reached me about these mills that I was anxious to see for myself what they could really do on a refractory ore, such as this. That they can treat free-milling ores on a laboratory scale I had already learned. The ores in this camp are not only refractory, but they carry such a high percentage of copper that treatment with cyanide is out of the question. The fact, then, that three of these Crawford mills, without concentrators, or chemical adjunct of any kind, had been treating about 20 tons of ore daily since September, and saving nearly 90% of the gold contained in some 2,500 tons of ore, speaks volumes for the extracting power of these new machines." MECHANICAL GOLD EXTRACTOR COMPANY,
N. O. ROSS, Secretary.

The Determination of Barium in Ores.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Mr. Trachsler's experience with the determination of barium sulphate in ores as described in your issue of February 18th seems to be rather unusual. According to his analyses 50% of the barium sulphate dissolves at 110°, the boiling point of constant hydrochloric acid, while at 80° the whole of the barium sulphate remains insoluble. He also confirms this statement by quoting Fresenius, who says in his text books that barium sulphate is perceptibly soluble in boiling concentrated hydrochloric acid.

In the first place but few chemists have the time to spare to boil their insoluble residues one hour and a half in strong acid when less time will accomplish the same result. In the second place, there can be no perceptible loss of sulphuric acid resulting from the alleged decomposition of the barium sulphate, and when the solution is diluted as it must be to prevent the destruction of the filter, there should be enough sulphuric acid there to reunite with the barium and re-precipitate the same. If, according to Mr. Trachsler, it is a question of temperature I see no reason why the barium sulphate should not re-precipitate when the solution is cooled to 80° or below that point.

Judging from an article in the same issue of your journal the ores from the Sierra Mojada contain more or less sulphur as sulphide, which, of course, must be oxidized before the insoluble residue can be determined, and this oxidation will produce sulphates, or free sulphuric acid, which will render the separation of the barium sulphate more complete. Owing to lack of time I have been unable to make a series of experiments in this direction, but to satisfy myself as to the solubility of barium sulphate in boiling hydrochloric acid I took two of our typical barytic ores and treated them in practically the same manner as described by Mr. Trachsler. The first gave the following results on analysis: SiO_2, 7·0; $BaSO_4$, 37·07; CaO, 7·1; MgO, 3·9; Fe, 8·2; Pb 4·2; Zn, 4·2; Cu, 2·6; S, 10·4. After decomposing the weighted sample with nitric acid I boiled down to dryness with strong hydrochloric acid. This I allowed to occupy half an hour, after which I took up with strong hydrochloric acid, and boiled for another half hour. Before filtering I diluted with about three times its bulk of water. If the barium sulphate is soluble it must be in the filtrate and washings. The amount found there by precipitating with sulphuric acid and removing the lead with hot ammonium acelate was 0·03%. The barium sulphate found in the insoluble residue was a little higher than that found in another sample of the same ore treated with acid at 80° for one hour until evaporated to dryness and then taken up with strong hydrochloric acid and treated again at 80° for one half an hour. The second sample treated was an oxidized ore having the following composition: SiO_2, 39·7; $BaSO_4$, 29·7; CaO, 6·9; MgO, 0·3; Fe, 6·0; Pb, 3·9; Zn, 0; Cu, 0·3; S trace. This sample was treated like the first with the exception of the previous decomposition with nitric acid. The barium sulphate found in the filtrate of the sample treated at 80% was 0·03%, while that found in the filtrate from the boiled sample was 0·55%. The barium sulphate found in the insoluble residue was the same after both methods of treatment. I see no reason to believe that the barium found in the filtrates was necessarily barium sulphate dissolved by the strong hydrochloric acid, since it could easily have been another salt of barium occurring in the ore.

To confirm these statements I quote the following from a paper by F. W. Mar ("Journal of Analytic and Applied Chemistry," Vol. 5, page 282). "It appears from these experiments that, as in the preceding series, the solubility of barium sulphate in solutions constituted as described is not increased by the free hydrocloric acid, and that the effect upon the solubility when this acid is present in great strength is to make the precipitate rather more insoluble, if anything, than it is in water. In this connection, it should be remarked that experiments of Fresenius,* together with somewhat similar experience gained by the writer in another line of work not included in this account, point to the fact that the presence of an excess of hydrochloric acid is an important condition of this high degree of insolubility." In one of the experiments referred to Mr. Mar uses one part of strong hydrochloric to 7 parts of water, and in the other experiments he uses one part acid to 3 parts water. In my work I dilute with about 3 parts of water.

If the Sierra Mojada ores are troublesome in regard to the determination of the total barium, the addition of a little sulphuric acid to the hydrochloric acid solution before evaporating to dryness would, no doubt, remedy the difficulty. If iron is to be determined in the filtrate by the permanganate method such an addition of sulphuric acid would be advantageous. The sulphate of lead may be removed from the insoluble residue with hot ammonium acetate. Frequently, however, there are enough sulphides in the ore to produce all the sulphuric acid necessary.

As stated in my original paper, these methods, like all others for quantitative determinations, have to be modified occasionally to meet the demands of different ores, and any chemist should be able to make the modifications necessary.

With Aspen ores I have been unable to detect any errors as serious as Mr. Trachsler mentions and due to the same cause.

ASPEN, Colo., March 1st. STUART CROASDALE.

Mannesmann Tubes for Locomotive Boilers.—The German Railroad Union, after careful tests, has approved the use of tubes made by the Mannesmann process for locomotive boilers, and the same action has been taken by the management of the Prussian State roads. Large orders for such tubes have recently been placed with the Mannesmann Company. According to the "Eisenbahn Zeitung," tubes are now made with a uniform outside diameter, but with the thickness gradually diminishing from one end to the other. In boilers these can be placed with the heavier end near the firebox and the thinner end toward the smokebox, thus securing a better utilization of the heat.

* Zeitschrift für Analitische Chemie, Vol. IX., p. 62.

THE ALBERT SILVER MINE, SOUTH AFRICA.

This mine, which is situated 50 miles south of Pretoria, has been in operation for a number of years. It is said that upward of $350,000 have been spent in unsuccessful work, but it is now believed that under the direction of Mr. Eissler, mining engineer, a profit will be made.

The Albert vein, which is on the Roodepoort farm of 10,000 acres, consists of quartz impregnated with hematite and carrying silver and copper. The average grade of ore is said to be 3% copper and about 18 ozs. silver per ton. The vein varies from 10 to 40 ft. in width, but its average may be taken at 12 ft. The south footwall is of granite, but there is no hanging wall, the formation to the north being composed of an intrusive rock, highly mineralized, which is 500 to 600 ft. in width. Actual explorations with the diamond drill have shown that this immense body of intrusive rock contains on an average 6 to 7 oz. of silver to the ton, and, in some places, assays as high as 27 oz. have been obtained. After passing through this intrusive body of ore the granite formation on the north is reached. At present all practical work is confined to the ferruginous lode on the footwall, as sufficient data have not yet been collected to determine the outside body of mineralized matter.

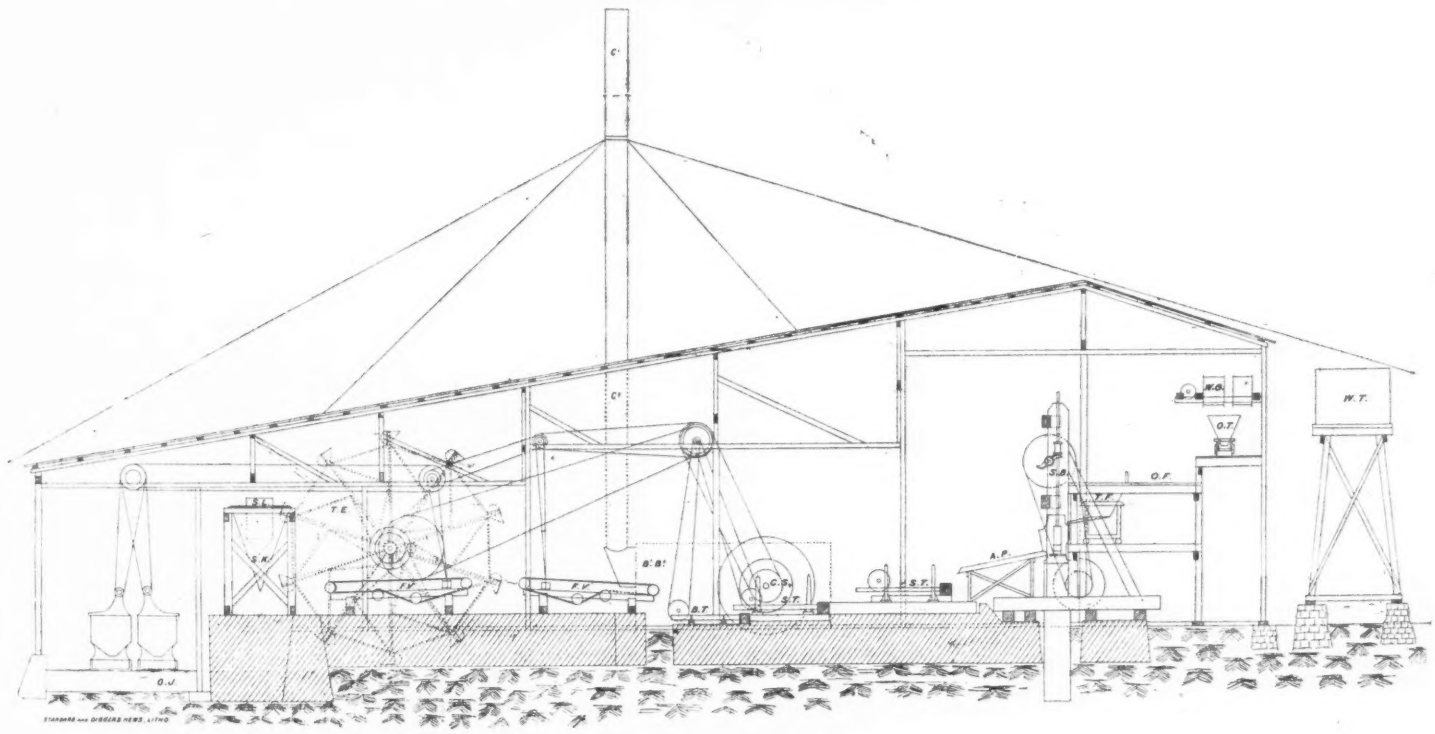
Two main shafts have been sunk on the property. One, No. I. West Shaft, is 150 ft. deep. Four hundred feet distant from No. I is sunk the East or No. II. shaft to a depth of 230 ft. Both of these main shafts have been sunk in the country rock, south of the lode. To prove the ferruginous lode and ascertain its character No. III. shaft has been sunk on it down to the 150 ft. level, and assays taken show an average of nearly 25 oz. of silver to the ton, going at times as low as 16 oz., and again as high as 45 oz., with the occasional occurrence of small leaflets of metallic silver, and containing 15% of copper. Beyond the Western Shaft a winze has been sunk on the lode to a depth of 60 ft., and east of the Eastern Shaft a winze 25 ft. in depth also on the lode. The lode is thus proved for an extent of 1,600 ft. To the west again, half a mile off, the same outcrop of ferruginous ore is visible on the surface, and, about a mile to the east of the opened mine, it crops up; but as yet no work has been done on these distant portions of the lode. The ore opened up and in sight at the 150 ft. level, taking the average width at 10 ft. only, is 150,000 tons, and in addition there are fully 10,000 tons of ore lying in the dumps on the surface, of an average assay value of 16 to 20 oz. of silver and 3 to 5% of copper. The mine, engine houses and central works, described later on, are lit up by electricity.

In the reduction works a 55-H. P. Corliss engine, with two multitubular boilers, drives the whole of the stamps and concentrating plant. The battery at present consists of 20 Fraser & Chalmer's 850-lb. stamps. The ore is shoveled from the floors into Tulloch's ore feeders, and, these feeding the batteries, it is crushed through 550-mesh screens, whence the pulp passes over amalgamated copper plates where a portion of the metallic silver in the ore is caught by a process invented by Mr. Eissler in which silver amalgam is used. In order to have continuous and automatic flow of the pulp over the various machines used, the mortar boxes are fixed 6 ft. above the floor-level of the battery-house.

In the treatment of the ore the pulp, on leaving the mortar-box and passing over the plates, is divided into three streams. Each stream passes over one Scouler side-discharge percussion table, there being three Scouler tables to each set of five stamps. By this means a proper flow of pulp is effected, commensurate to the capacity of each table. These tables do not require skilled labor to keep them in adjustment, and, from the results so far obtained, 12% of the weight or 30 to 33% of the value of the ore is collected on them.

The pulp, having passed over the Scouler tables, flows through launders or troughs into a collecting sump, whence it is lifted by a 22 ft. in diameter bucket-elevating wheel into a launder, which carries it to a sizing apparatus.

The sizing apparatus or hydraulic separator consists of three Spitzlutten with a large Spitzkasten or pointed box at the end. The ore or stream of pulp passing into the separator is here nicely graded, and the equal-falling grains, or, in other words, such as sink with equal speed in an ascending current of water, are sorted according to volume and density. The coarse grains settle in the first Lutte, and the fine slimes in the last large-pointed box. In the four used, four grades of material are obtained, and from each box the pulp is discharged on two Frue vanners, there being at present eight in use, while two more are being added. The tailings from the vanners receiving the pulp from the first two Spitzlutten run over four Hartz jigs. The flow from the vanners receiving the discharge of the last two Spitzlutten, being too fine to pass over jigs with any advantage, is run through a series of riffled flumes. The tailings-flow from the jigs is also turned into a set of riffled flumes. All the flumes used are 400 ft. in length.



CONCENTRATION WORKS OF THE ALBERT MINE.

G J—"Green's" Jigger Floor.
S L—Spitzlutten Sizer.
S K—Spitzkasten.
T E—Tailings Elevator Wheel.
F V—Frue Vanners.
B T—Bumping Tables.
S T—Scoular Tables.
A P—Amalgamation Plates.
S B—Stamp Battery.
C S—Main Crank Shaft.
T F—Tulloch Ore Feeder.
O F—Ore Floor.
O T—Ore Truck.
W G—Winding Gear.
W T—Water Tanks.
B^1B^2 Boilers.
C^1C^2—Chimneys.

The concentrates from the flumes assay 25 to 30 oz. per ton. Mr. Eissler is now experimenting on the very fine slimes with Bialhatz's steam vanner.

The concentrates will in all probability be treated on the spot. They will be roasted with salt, the soluble chloride of copper leached with water and the silver with hyposulphite of soda. Until the necessary plant is built, the concentrates will be shipped to England. The average grade now shipped is 80 oz. per ton and 10⅔% of copper.

Manufacturing Caustic Soda and Bleach by Electrolysis of Salt.—In our issue of December 24th we gave some account of the cost of preparing caustic soda and bleach by the electrolysis of salt, by the Le Sueur process in England. The other two processes that have been tried practically are those of Greenwood and Richardson & Holland. The first named was tried in London, but the works are now closed. The Richardson & Holland process is at present being worked by the Electrolytic Caustic Soda and Chlorine Trust, at Snodland, Kent. The power is supplied by a 150 H. P. engine and 80 H. P. dynamo. At the top of the works there is a large tank, in which the salt is dissolved with the help of an agitator. The solution descends through pipes into a series of 10 vats, each 20 ft. long, 3 ft. wide and 9 in. wide. Each vat is divided into 60 compartments for the anodes and cathodes. The current traversing the vats is 450 amperes at 40 volts. The chlorine is passed into two lead chambers, where it is absorbed by lime, forming chloride of lime. The solution of caustic soda is used on the spot in another chemical process, and is not evaporated as usual. No figures relating to cost are available.

VARIATIONS IN THE MILLING OF GOLD ORES.—IV. OTAGO, NEW ZEALAND

Written for the Engineering and Mining Journal, by T. A. Rickard.

The province of Otago, in the south island, was the first gold mining district opened up in New Zealand. Its history dates from the discovery in June, 1861, of the golden gravel which made Gabriel's Gully a household word in the colonies. It has ever since continued to be more of a rich and extensive alluvial field than a quartz mining country, but the last few years have seen considerable progress in the development of the quartz lodes whose importance is becoming better recognized. Up to March, 1892, Otago, which has an area of 20,000 square miles, has produced 4,889,563 oz. of gold, having a value of £19,-310,707, or $96,553,535. For the year ended March 31st, 1892, the yield amounted to 105,531 oz.; worth £423,527, or $2,117,635.

The milling practice has largely followed that of the older mining centers of Victoria, but altered conditions have induced some variations which have given it certain characteristics which merit our attention. The three mills whose figures are given in the comparative table which follows are fairly typical. The Phoenix battery at Skippers is one of the best known in New Zealand, and nestles at the feet of the snowy ranges of the Southern Alps. The Premier at Macetown is an old mill shortly to be replaced by a larger plant. The last on the list is a mill at Nenthorn, a mining camp which, though of comparatively recent origin, has already passed through many vicissitudes of alternating failure and prosperity.

COMPARATIVE TABLE.

Name of Mill.	Stamps.	Weight.	Drops per Min.	Height.	Depth of Discharge.	Capacity of Stamp.‡	Capacity of Mill.	Grating.	Holes per Square Inch.	Concentrates.	Bullion.	Retort.	Wear of Gratings.	Loss of Mercury per Ton of Ore.	Consumption of Water.
		Lbs.		In.	In.	Tons.	Tons.		Holes.	%	Per 1,000.	%	Days	Dwts	G'ls.
Phœnix	30	800	78	7½	3½	1.4	40	Steel cloth	140	not svd.	930	45	6	8.4	4
Premier	10	750	77	7	6½	1.2	12	*	180	"	949	31	8	7	3½
Reliance	10	850	75	7½	2½	2.0	20	*	200	"	850	35	12	5	5

* Round punched Russia iron.

The Phoenix mill at the head of the Shotover River was one of the pioneers in the utilization of electricity for the transmission of power. The plant was erected in 1884 and consists of two Pelton wheels under a head of 180 ft., which drive two Brush dynamos connected by two No. 8 B. W. G. copper wires, nearly three miles long, to a Victoria motor, which in turn supplies the power to run 30 stamps, together with a rock breaker, and to light the buildings.

Each stamp complete weighs 800 lbs. The speed varies from 75 to 80 drops per minute. The height of the drop is from 7 to 8 in. The depth of discharge is variable. At the commencement of the month and immediately after the clean-up, it is 2½ in. The maximum distance from the bottom of the grating or screen to the die or false bottom is reached when the dies are worn down and it is then 4½ in. The average is therefore 3½ in. The mill crushes 460 tons per fortnight of twelve working days, or at the rate of a little under 1½ tons per stamp per 24 hours. Two kinds of grating or screen are in use. Wire cloth is chiefly employed, but when the supply runs short the ordinary round punched Russia iron is substituted. The holes in the two cases are of similar size, but the number of them per square inch is 324 in the one case and only 140 in the other. The pyrite which the ore contains has been proved to be of very low grade and no after concentration is therefore attempted. The bullion is 930 fine. The last two shipments previous to my visit were: 922½ fine, worth £3 18s. 3d. and 933 fine, worth £3 18s. 3d. The loss or consumption of mercury was 90 lbs. avoirdupois during the crushing of 3,107 tons of ore, being at the rate of 8·4 dwts. Troy.

The gold saving is done by the mortar box and by blanket tables, the residues from the one and the washings from the other both undergoing supplementary treatment in an amalgamating barrel. The method of milling is particularly simple. The ore passes through a rockbreaker and is fed by an automatic arrangement into the battery. The feeder, though a very elementary contrivance, does very good work and is worthy of description. When there is insufficient ore on the die the tappet strikes the head of an iron rod whose lower end is fastened to a shoot leading to the ore bin. The bottom of the shoot passes upward under the ore and the shock communicated by the stamp through the tappet to the ore causes it to move downward into the feed-hole of the battery. This is the idea which underlies most of the more complicated machines which are used for the same purpose.

The mortar box has a depth from the lip or level of discharge of 9½ in., distributed as follows: Distance from bottom of grating to top of die, 2½ in.; thickness of die, 4 in.; false bottom, 3 in. This false bottom consists of two sets of four bars, which are placed under the dies and are packed in between with sand. Each of these bars is 3 in. square and has a length of 2 ft. 5 in. The space between each bar and the distance of the outer ones from the side of the coffer or mortar box is in each case 3½ in.; the interior width of the coffer being 15½ in. The whole arrangement is simply an expedient for surmounting the difficulties presented by a mortar whose shape is unsuited to the nature of the milling required by the ore. Before starting the mill the coarse sand from the previous clean-up is packed between and around the dies. The order of the drop of the stamps is 3, 5, 1, 4, 2. No mercury is added to the ore when in the mortar box, the gold being arrested by the action of gravity alone.

On leaving the mortar box the pulp has three drops, making 18 in. in all, before it reaches the uppermost blanket. This fall serves the purpose only of spreading the material. There are no amalgamating tables, and the pulp passes immediately over the blanket strakes. These last have a length of 18 ft. and a width of 6 ft., subdivided into four partitions. The gradient is ⅞ in. per foot. The quantity of water used amounts to about 4 American gallons per stamp per minute, and is supplied to each 15 stamps by two 1½-in. pipes under a head of 25 ft. The blankets are freed from the gold and heavy sand which they collect by being washed in a tub of water. A vigorous movement through the water is given to them. The top row (there are four rows) of blankets is washed every hour and the lower ones at longer intervals, depending very much upon the richness of the ore.

The blanketings, or residues from the washing, are removed from the tub when a certain amount has been accumulated, and are conveyed in buckets to a barrel, 5 ft. by 4 ft., having a capacity of 120 gallons, equal to about one ton of blanket residues. In running 25 to 30 stamps with the average grade of ore—15 dwts.—to the ton, the supply for a barrel is obtained each day. Warm water is not used, nor are pieces of iron introduced. as is often done in California, with the idea of assisting the grinding, but with the result of flouring the mercury. Experiments are being made with the use of bluestone. A full bottle* of mercury is added. The barrel turns at a speed of 20 revolutions per minute.

When the amalgamation is considered to be completed, usually after 24 hours, the material is emptied into a vat underneath from which it is slowly fed by a running stream of water to a shaking table of the Rittinger type, and having dimensions of 8 ft. length and 2 ft. width. Below the table there are a few pieces of copper plate, which, however, serve but little purpose. The collection of the amalgam from the contents of the barrel by the shaking table occupies from 2½ to 4 hours, depending upon the rate of feeding which again varies directly with the heaviness of the pulp. The material—amalgam, pyrites, heavy sand, etc.—thus roughly concentrated is placed in enamelled iron buckets to be further washed by hand in a "dish" or pan. This latter utensil has the shape of the ordinary friend of the prospector, but it is of copper, and, its surface having become amalgamated by frequent use, it readily collects the amalgam.

On examining the tailings below the shaking table the writer found that they contained a large amount of floured quicksilver. It will be noted by reference to the comparative table that a loss of 8·4 dwts. of mercury per ton of ore crushed is there shown. This is more than the average, and is due undoubtedly to the excessive speed of the amalgamating barrel, whose 20 revolutions per minute should be diminished to about 14. At Clunes, in Victoria, the speed is 16 revolutions with a much smaller barrel. At the monthly clean-up the battery residues are roughly screened on a riddle, and the larger bits of quartz removed previous to adding the remainder to the blanket washings, to share with them the treatment in the barrel.

Before entering into a discussion as to the effectiveness of the milling the following additional details will be of value. Two kinds of screens or gratings are used, wire cloth and round punched Russia iron. The friable quartzose character of the millstuff makes the former preferable. It is easier placed in position upon the screen frame, it has a somewhat longer time of wear and a much greater area of discharge. The punched iron gives finer crushing at first, before the burr is worn off, but afterward becomes easily choked up. The short life of the gratings, a week for the wire, and slightly less for the punched iron, is not due to anything in the ore itself, which is a comparatively clean quartz, but to the fragments of wood (from mine timbers), which to a more than usual extent find their way into the millstuff. They choke up the gratings, which by reason of the pressure of the water and pulp thus held back are caused to burst. This is notably the case with the punched iron, which discloses lines of weakness along the vertical divisions made by the press employed in their manufacture.

The wire cloth, No. 18 mesh, costs 9s. per yard. It is sold in pieces 30 yards long by 2 yards wide. The grating cut out of this is 2 ft. 6 in. by 10 in. On the other hand 120 punched Russia iron gratings cost £17, or 2s. 10d. apiece, as against 2s. 2d. for the wire cloth. The expenditure under this head amounts to £5 per month for the 30 stamps.

In the place of blankets green baize is used; it costs 3 shillings per yard and has a time of service varying from three to four months. The expenditure per month is equal to £7 for the entire mill. Those which are least worn are always placed in the first row. The washing of the blankets is done by boys, the wages being 7½s. per shift. One stout lad will do the work demanded by three batteries, but cannot manage the washing of the blankets belonging to 4 batteries or 20 heads.

The treatment of the ore as carried out at this mill is interesting on account of its simplicity. Before questioning whether it be correct in principle we must examine the ore. This is essentially of the free milling type and is broken from a large quartz lode traversing schists. The quartz often has a laminated or ribbon structure which renders it readily broken. Inclusions of country rock are common. Pyrites or other sulphide minerals are present in very small proportion, from about ½ to ¾% only. Concentrating tests have shown that the best product will contain only 10 dwts. of gold, giving a value too low for treatment in this particular locality, and on the small scale required by the necessities of the case. The gold occurs free. Ore containing more than the usual percentage of pyrites is generally below the average grade. The gold is not therefore notably associated with the pyrites. It is usually coarse and often visible. Quartz which in the stopes does not on examination show occasional specks of gold is generally of low tenor. On being crushed the matrix of quartz readily separates from the particles of gold. In the mill it would be expected that the coarsest gold would be found to remain in the mortar box and that that obtained from the first row of blankets would be less fine than that washed from the bottom row. Such is the

* In Australia a bottle of mercury contains 75 lbs., and in America a flask holds 76½ lbs. avoirdupois.

case; that found in the batteries on cleaning up is very coarse indeed, pieces weighing 5 to 8 dwts. being occasionally obtained.

The mill is illuminated at night by electricity, and on examining the blanket strakes by the aid of the powerful arc light the yellow particles of gold can be distinctly seen scattered over the green baize. The clean-up indicates the distribution of the gold saving; 230 tons yielded 691 oz. of amalgam. Of these 691 oz., 270 came from the blanket washings and 421 from the residues in the mortar box. Thus about 61% remained in the battery. On retorting, 313 oz. of bullion resulted; and upon melting, this was reduced to 301 oz. 4 dwts., worth £3 19s. 3d. per ounce.

(To be Continued.)

THE MANHES CONVERTER.

The illustration given is a section of the Manhes converter as used at the Eguilles works, and as adapted and improved by M. Mayen, the director of those works. The converter is mounted on a carriage so that its position can be changed as needed. The blast can be directed upon the surface of the mass or forced into it as required, the change being effected by rotating the body of the converter; this is done by means of the pinion gearing into rack attached to the lower side of the converter, as shown in the engraving.

M. Mayen has made many interesting experiments with the Manhes converter at Eguilles; and he has succeeded in making copper of 98 to 99% purity in a single operation. The metal is melted in a cupola

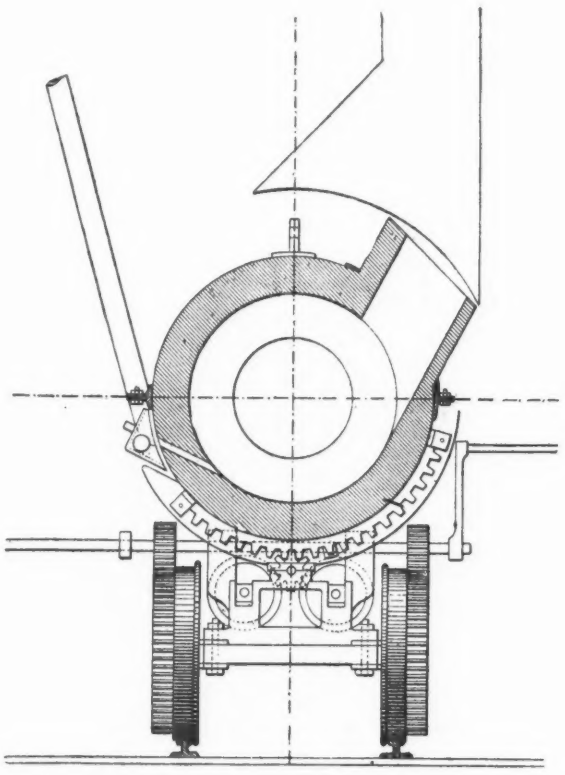


FIG. 1.—THE MANHES CONVERTER.

furnace with water-jacket. The matte is a double sulphate of copper and iron in the proportion: Copper, 35%; iron, 33%; sulphur, 32%. The richer the matte the more rapid is the operation. If it is too poor the operation is slow and there is more risk of impurities in the copper. An excess of iron, for instance, will cause part of that metal to be precipitated in a metallic state.

The melted matte is run into the converter and the speed of the operation varies according to the quantity of matte and the pressure of blast used. The pressure varies from 30 to 50 cm. of mercury.

The treatment requires from 90 to 150 minutes, the time sometimes increasing to three hours. With a newly lined converter it is usual to treat only from 100 to 300 kilos. of copper at a charge, but when the apparatus has been used four or five times, 1,200 and sometimes 1,500 kilos. of copper can be made at one operation.

Boiler Explosions in the United States.—Statistics collected by the "Locomotive" give the number of boiler explosions in the United States in 1892 at 269, against 257 in 1891. The explosions last year killed 298 and injured 442 persons. The greater number occurred in the winter months, 35 in January, 32 in November and 34 in December, while there were only 11 in June, 20 in July and 16 in August.

Nickel-Steel Guns in Germany.—A severe test of a nickel-steel gun was made recently at Meppen in Germany. Two 3·4-in. shells, each loaded with 6 oz. of picric acid, were placed, one in a gun of ordinary Krupp steel, the other in a gun of nickel-steel, at a distance of 12 in. from the muzzle. The shells were then exploded. The muzzle of the ordinary steel gun was blown into a number of pieces, but the only effect on the nickel-steel gun was a local enlargement of about ¼ in. in the bore.

THE OCCURRENCE OF MANGANESE ORE IN VEINS.*

Written for the Engineering and Mining Journal by Edward Halse, A. R. S. M.

Near Mulege, Lower California, several veins of manganese ore may be seen traversing trachytic rocks. At Guadalupe the prevalent direction of the veins is N. W. to S. E. (magnetic declination E.11°53'). varying, however, from N.27°E. to E.42°S. The thickness varies from a knife blade up to four feet, and the contents are psilomelane, gypsum, crystalline quartz, oxide of iron, and "country," often arranged in layers parallel to the walls. In the hard trachyte the veins are very poor, and show little or no quartz. Here also a number of small veins, dipping flatly to the east, form a kind of "stockwork." At Los Pilaris a similar appearance is presented by a number of small veins varying from mere threads up to a few inches thick. They chiefly run N.35°W. to S.35°E., and dip W. at a high angle, sometimes the dip is contrary. The veins course in wavy lines, and occasionally junctions occur between them. The ore is much purer than at Guadalupe, being generally free from sulphate of lime.

At La Trinidad, where the best ore has been found, two almost N. and S. veins intersect. The rock, having the appearance of mottled clay at the surface, is probably decomposed trachyte. One vein runs N.14°W., turns about 13°, and then crosses the chief one, which runs N.8½°E.—both dip westerly. At the junction there is soft red rock impregnated with manganese ore about 12 ft. thick. On the hanging side is 1½ ft. of pyrolusite of good quality; but the ore toward the centre of the vein and foot wall is much mixed with iron. The ore appears to occur in lenticular masses with axis parallel to the dip, and which close rapidly both vertically and horizontally.

At Santa Rosa red trachytic tufa strikes N. S. and dips W.57°. Here the main joints run E. W. to E. N. E. and W. N. W., dips S., and are frequently stained by manganese, and are sometimes coated with several inches of it. Cross joints, dipping E.80°, are also lined with the ore.

In another locality red porphyritic conglomerate contains oxide of iron, and little veins and patches of manganese. Here and there joints containing clay open out into pockets of blue and green carbonate of copper, gypsum and talc.

The manganese ore probably comes from the trachyte, and the filling is believed to be more or less superficial, and no doubt the result of surface erosion and decomposition. The veins at Guadalupe, which contain gypsum, may owe their origin to hot springs.

The ore is very variable in composition, containing 1 to 7 per cent. of iron, 3-10ths to 25 per cent. of silica, 5-100ths to 27-100ths per cent. of phosphorus, and 39 to 59 per cent. of metallic manganese. The ore contains also some aluminum, copper, lead, and occasionally silver. An ultimate analysis would seem to show that in this ore lime takes the place of baryta, and magnesia that of potash in the ordinary psilomelane.

In the Lower Silurian formation of East Merionethshire, Wales, various patches of trappean ash and felspathic porphyry or trap occur, having a general north and south (true) trend. The bedded ashes vary from a hard bluish and jointed to a soft reddish rock which sometimes has the appearance of a bedded trap and sometimes is decomposed

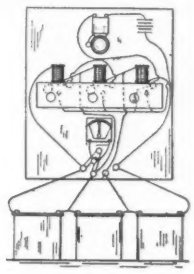


FIG. 2.

into white clay. One vein of manganese ore crossed E.17°S. to W.17°N. (magnetic declination W.21°), through greenish yellow felspathic ash much stained with oxide of iron, and consisted of about one foot of solid ore, the rest being a network of stringers. On sinking, the rock became harder and was much stained with oxide of iron; the dip changed from S. to N., and the vein was characterized by white opaque quartz. At 43 ft. the sinking was stopped, the appearances being extremely unfavorable.

Another vein ran E.36°S. to W.36°N., dipping S.W.75° to 85° in very soft felspathic ash. The ore in this instance was pyrolusite chiefly in two ribs, 21 and 9 in. thick, respectively, and separated by 10 ft. of "country" impregnated with manganese ore. Harder rock was met with in both directions of the drivage, and the ribs dwindled away to almost nothing.

In driving a crosscut a small pocket was struck consisting of nodules of manganese and iron ore in soft clay, striking N. E. to S. W., and dipping flatly S. E. The nodules consisted of blue manganese ore veined with quartz, or of manganese and iron ore mixed, or of impure earthy brown iron ore; subsequently the deposit proved to be the enlargement of a joint merely.

One vein was explored 3 ft. wide and coursing E. and W. in kaolinized ash. The contents were impure earthy brown oxide of iron with spots and patches of pyrolusite and psilomelane. The iron ore appeared to be pseudomorphous after the latter. One sample contained .35% of phosphorus, but no manganese.

The most promising vein was mined in a regular manner for about 250 ft. in length at a depth of 100 ft. from surface. It was found that the vein was usually manganiferous: (1) when certain rock joints formed

* Being an abstract of two papers read at a recent meeting of the North of England Institute of Mining and Mechanical Engineers.

acute angles with it; (2) when the dip was about N.65° and regular, and the hanging wall smooth and well-defined, and (3) when the strike of the vein was N.30°W.

On the other hand, the vein was poor when certain joints formed obtuse angles with the vein, or crossed it at right angles, when the rock was hard and much jointed, when the dip was high (75° to 85°), and when the strike was a few degrees more northerly. The vein was extremely irregular in its filling, both vertically and horizontally, being sometimes 5 ft. in width, and in the next foot or so it would be almost entirely cut off. The ore generally came in bunches dipping northwest, and usually as hard and quartzose psilomelane, was present as stringers, in lumps, or in more or less regular layers parallel to the walls.

As a rule, east and west veins in this district bear little or no ore, but there would appear to be some exceptions to this. One vein striking E.16°S.—W.16°N. and dipping N., was formerly worked 60 ft. in depth and the same in length, but, although a bunch of ore would appear to have been met with, the vein was not found to extend E. and W. About 20 years ago a vein, which courses E.15°N. to W.15°S. and dips S.52°, was worked on the Garth Hill for a length of 100 ft., a depth of 60 ft. and a width of 6 ft. In this district whenever a bunch of ore has been found it is generally near the junction of two veins.

About one mile W. of the Rhyd-y-fen Inn a small "floor" of manganese ore is seen, as well as a kind of stockwork.

An examination of the bearings of the veins and rock joints clearly shows that they are often identical or nearly so in direction. What is remarkable is the great variability in the direction of the veins and rock-jointing—no regular system appears to prevail. In some places the prevailing jointing is in three directions. Superficially at any rate, this system is crossed by a more recent set of joints, and fissures. A few of the veins are identical in direction with some of the faults shown in this area.

The conclusion was arrived at that the manganese ore merely locally fills the joints and certain faults and superficial fissures in the country-rock; and it is believed that the filling is the result of surface erosion and decomposition.

The ore contains from 43·8 to 54% of metallic manganese, from 3·6 to 14% of silica, ·5% of iron, and from ·147 to 1·608% of phosphorus.

The Skiddaw Slates (Lower Silurian) of the Lake District are traversed by some hematite and manganese veins running N. W. to N. N. E. (true), and dipping N. E. to E. The ore occurs as a narrow strip along one wall, or completely fills the vein. There is rarely any mineral found in them, but dolomite, quartz and calcite. The direction sometimes corresponds with the bed-planes of the rock, sometimes with its divisional planes, and sometimes with the cleavage (J. D. Kendall).

Manganese and iron lodes occur in the Silurian felsite porphyry and metaphyre of the Thuringian Forest. The ore consists principally of pyrolusite and psilomelane and is mostly without gangue. The ore is in parallel bands or in irregular patches, the width varying from mere lines up to 15 ft., and changing very suddenly. In some instances they have been worked down to 300 ft. from the surface. The veins strike N. S. to N. E. and S. W. (Von Cotta, J. A. Phillips, and Dr. A. von Groddeck).

Near Ilfeld, in the Harz, manganese veins occur traversing porphyrite of Triassic age, and varying from a few inches to 3 ft. wide, dipping from 60° to 80°, and striking between W.8°N. and N.30°W. (true). Manganite is the chief ore associated with hausmannite, heavy spar and calcite. The lodes are sometimes filled with manganite and sometimes with barren "country." The veins are regarded as secretions from country rock in fissures (Von Cotta and Von Groddeck). The veins are seldom productive to a greater depth than 36 ft. but have sometimes been followed down to beyond 180 ft. (J. A. Phillips).

In the Upper Schwarzwald (Baden), veins of iron and manganese occur in granitic rocks in contact with Triassic sandstone. The iron, as specular iron and hematite associated with heavy spar, occurs as bands in the same veins as manganese, or separated by wedges of "country" or in separate and parallel veins. The manganese veins consist of manganite and pyrolusite chiefly, rarely associated with any true gangue. The veins course mostly N. W. to S. E., and the thickness is in general only a few inches. From 50 to 60 ft. in depth the manganese disappears, and at 100 ft. the iron ores follow, being gradually replaced by copper or cobalt ores (Dr. Carl Zerrener).

In Portugal manganese lodes occur traversing quartzites of Silurian and Lower Carboniferous age. The ore is pyrolusite and is associated with hematite and heavy spar (J. A. Phillips).

Some small veins of manganese ore occur in Sardinia, traversing trachytic tufa, but they are of no commercial value. In the trachytic conglomerate or tufa of Koenigswinter, on the Prussian Rhine, small veins of psilomelane strike N. N. W. to N. W. (true) and dip S. W. 95°. The ore is associated with iron ochre and ehrenbergite (Dr. Carl Zerrener).

The manganese ore of the manganiferous silver veins of Butte City, Mont., is worked only for the precious metal, and for its use as a flux. When the manganese forms a large percentage of the leads the silver is low, and vice versa; and below the water level (150 to 200 ft.) of the gray granite "country," silicate and carbonate of manganese replace the black oxides (W. P. Blake, etc.). Beds, formerly regarded as lodes, of carbonate of manganese of Cambrian age occur in North Wales, and also near Chevron, Belgium (G. Dewalque), and of supposed Silurian age in Newfoundland (R. A. F. Penrose, Jr.).

Fig. 1.

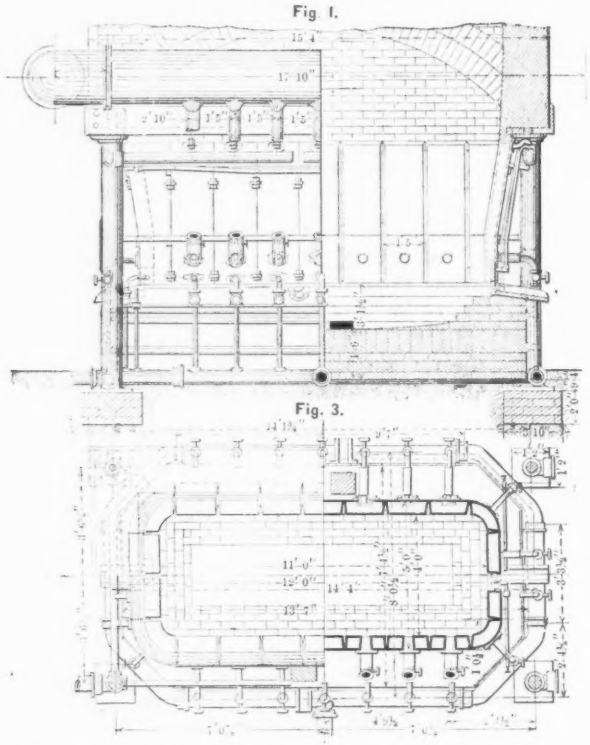


Fig. 2.

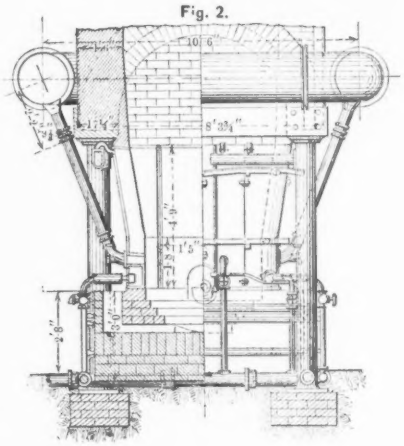


Fig. 3.

80 TON SMELTING FURNACE

MT. STEWART LEAD & SILVER

MINING CO. LDT.

Leadville, N.S.W.

Manganese occurs as a gangue in the silver deposits of Leadville, Colo. The miners say "that when a large amount of manganese is found in the iron vein material, rich chloride deposits are likely to be found in the immediate vicinity" (S. F. Emmons).

In New Mexico manganese ore is found as veins traversing blue limestone and black dolomite of Lower Carboniferous age.

In Tombstone, Ariz., manganese in the form of wad is a common constituent of silver-bearing veins in limestone and quartzites of Lower Carboniferous age (?). The ore is described as a "soft, black mass devoid of structure." It has been followed down 300 ft., and is still visible. The manganese (metallic) forms only about 1% of the manganiferous silver ore (R. A. F. Penrose, Jr.).

Manganese is often considered a good indication of gold, e. g., in Victoria, Australia, as psilomelane in quartz reefs, or cementing pebbles in auriferous conglomerate or "banket" (R. Brough Smyth), and, associated with talc, in the gold deposits of Minas Geraes, Brazil (W. J. Henwood).

From the above review we may fairly conclude: (1) That veins of manganese ore, although not of frequent occurrence, are known in ordinary stratified, metamorphic, volcanic and plutonic rocks of various ages; (2) they are usually very irregular in their filling; (3) they are associated with little or no gangue as a rule; (4), manganese ore often forms part of the gangue of gold and silver veins, and when not superabundant is considered a good indication for the precious metals; (5) down to water level black oxides are most prevalent; below that these in all cases must probably give place to the carbonate or silicate; (6) commercially speaking, manganese ore veins do not probably go much deeper than 300 ft. vertical; (7) they generally run N. and S. or as N. E. or N. W. "counters"; (8) manganese ore generally occurs filling gash or superficial veins, coating joints and bed planes, and occasionally forming pockets, bunches and stock works; (9) manganese and iron

ores are in many cases contemporaneous, but generally there is a tendency for the ores to occcur in separate layers, bands, patches or nodules in the same section of a vein, joint or plane, or in separate and parallel veins; (10) in certain instances oxide of iron has replaced psilomelane; in other instances, manganese and silica have been deposited together. The former has been dissolved out, leaving cellular crystals of quartz and clay.

MOUNT STEWART REDUCTION WORKS, LEADVILLE, N. S. W.*

By F. M. Drake, Sydney, N. S. W.

This paper describes a plant lately erected by the author for the Mount Stewart Lead and Silver Mining Company at Leadville in New South Wales.

The works are situated on a sloping hillside, but sufficient fall was not available to have the furnace as high as desired, and at the same time have a good slag-tip and sufficient depth on the ore-floor to store a supply of ore and flux.

The ore is delivered on the ore-floor (which is of the full width of the furnace-building, and extends back into the hill a distance of 70 ft.) by two overhead tramways (not shown in the drawings), one on each side. From these the ore-mixture is made up on one side, while it is being taken to the furnace from the other. The fuel also is delivered by these tramways. The fluxes are stored on a floor directly at the back of the boiler and engine room.

The boiler is a Cornish one, 6 ft. 6 in. in diameter by 25 ft. long. Its flue is 3 ft. in diameter and does not contain Galloway tubes. The working-pressure is 40 lbs. per square inch.

The engine is an old-fashioned one, with a cylinder 16 in. in diameter by 30-in. stroke. Both the engine and boiler had been part of the plant of a defunct gold-mining company. They were very extravagant in their consumption of fuel.

The blast is supplied by a rotary pressure-blower, of the Baker pattern, made in England. It has a capacity of 60 cu. ft. per revolution.

The furnace, which has several novel points, is shown in detail in Figs. 1, 2 and 3. The jackets are of cast iron, and are higher than those generally used. They are different, too, in that the feed water inlet is through a hand-hole plate near the bottom. This plate is fastened to the jacket by stud-bolts, and is provided with a baffle-plate, which prevents the cooling water from impinging against the inner plate. The outlet is by a goose-neck at the top, which discharges the water into the usual launders, and these convey it to the hollow columns which support the superstructure. These are connected with pipes, which lead to the cooling-tanks. The main water supply pipe, instead of being suspended around the upper part of the furnace, is laid underground. The valves on the branch supply pipes are easily reached by the furnaceman, and the quantity of water required can be gauged to a nicety. The supply pipes for the end jackets, as shown in the drawings, were found to be in the way, and were therefore connected with the pipes supplying the corner jackets.

The blast-nozzles are of cast iron and are held in place by pins passing through studs cast in the jackets. They contain butterfly-valves, so that the blast-supply can be regulated at each tuyere. The tapping-breast is of cast iron, and contains a coil of pipe through which water circulates. The slag-spout also contains a water-cooled pipe.

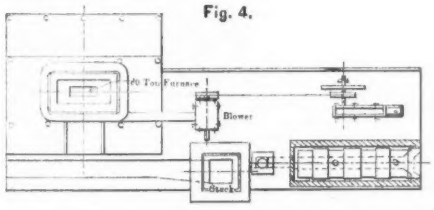
The smoke is drawn off, underneath the feed-floor, into a flue, which connects with a brick chimney 60 ft. high.

The feed-floor, over the furnace, consists of cast iron plates, supported by I-girders, which rest on the brick-work of the furnace. Small removable plates are placed so that bars can be introduced down the sides of the furnace if necessary.

As the plant is laid down, it can be enlarged without much expense or inconvenience. The furnace-building can be extended and another furnace put in. The engine-shaft can have a piece coupled to it, to drive a second blower, placed alongside of the one now used.

Figs. 4, 5, 6 and 7 show plans and sections of the general arrangement of the plant. Round timber was used in the construction where possible, on account of its cheapness. The sides and roofs of the building are of galvanized corrugated iron.

Fig. 4.



GENERAL ARRANGEMENT
SMELTING PLANT
MT. STEWART LEAD & SILVER MINING CO.
Leadville, N.S.W.

Fig. 5.

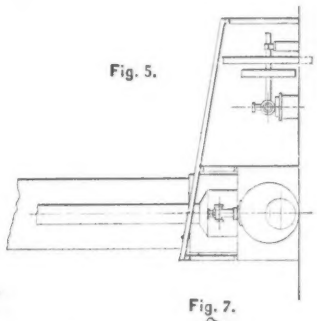


Fig. 6.

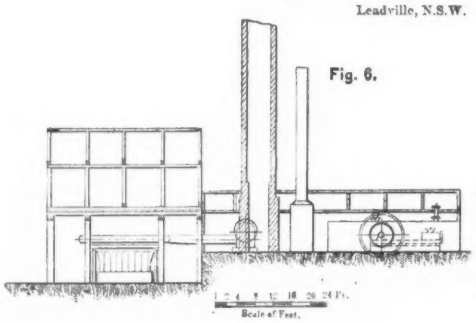
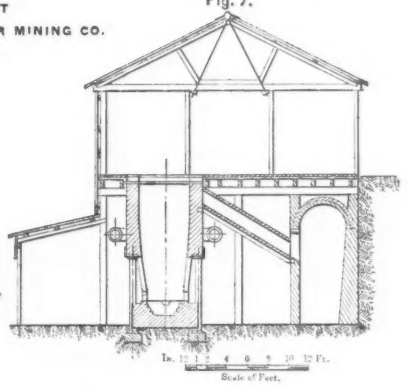


Fig. 7.



Jadeite in Upper Burma.—Mr. Fritz Noetling, of the Geological Survey of India, has written an interesting note on the occurrence of jadeite in Upper Burma. There are, he says, at present two groups of jadeite mines, the quarry mines near Tawmaw, and the river mines on the banks of the Uru River in the same neighborhood. Until within recent years, jadeite was obtained only from the river mines, where it was found in the shape of boulders mixed with other rocks in the alluvial deposits of the stream. A great impetus was given to the jadeite industry a few years ago through the discovery by Kachins of the mines near Tawmaw. The find was actively worked, as many as 700 laborers being employed in the quarries during the dry season; but it is probable that the demand for jadeite will always keep pace with the supply. Mr. Noetling remarks that jadeite is a curious instance of an article which is highly appreciated by certain people, who pay fancy prices for good specimens, while for others it has no value whatever. Burmans and Chinese value a good piece of jadeite as much as, if not more than, gold. A small specimen sufficiently large to fit into a signet ring may be worth $80 to $100 in Burma or China, whereas in Europe it is doubtful whether it could be sold at any price. The present system of mining, both in the quarries and river, is very primitive and wasteful. If systematic mining processes were introduced, and the use of dynamite substituted for the present crude method of breaking the rock by fire, the output of jadeite might be enormously increased. The mines are apparently the property of the Kansi Sawbwa, who receives a royalty amounting sometimes to half a lakh or rupees a year.

Cement and Iron Pipes.—In a recent number of "Le Génie Civil" a description is given of the application of cement to the construction of pipes on the Bordenane system by sidero-cement. The general principle consists of imbedding a framework of iron bars in cement mortar. Bars of I section are used, and these are made as long as possible, and are wound in helical form, the pitch of the helix being determined by the section employed and the pressure to be withstood. Dependence for structural strength to resist pressure is placed wholly on the metallic framework. The working stress is calculated at 9·8 tons per square inch, so that for a pipe 2 ft. 7½ in. in inside diameter a bar 0·5 × 0·2 in. would have a pitch of 3·8 in. for a head of water of 33 ft. Cylindrical vessels are also made on this principle, the bottom being suitably constructed of radial and circumferential bars, with vertical bars also introduced in the walls. In this case the pitch of the helix is lessened toward the bottom, so as to withstand the increasing head. The principles set forth have been proved by use, an experimental line of four miles in length having been constructed. Fortunately the coefficient of expansion of iron and cement are approximately equal; otherwise, of course, the system would not be trustworthy. The metal is completely protected from wasting by the cement, which adheres closely to it. It is said that no vegetation or deposit of any kind will attach itself to the cement, and the danger from leakage is said to be less than in iron piping with lead joints, and, finally, it is claimed that there is a saving in cost over iron pipes of 15 to 45%, "according to circumstances," while the property of durability is exceedingly good.

* Paper read at the Montreal meeting of the American Institute of Mining Engineers.

THE ELECTROLYTIC REFINING OF COPPER.*

The following researches were made by M. Kiliani, of Munich, who used a bath containing: Copper sulphate, 150 parts; concentrated sulphuric acid, 50 parts, and water, 800 parts, and a current of 20 amperes per sq. metre.

Oxide of Copper.—Oxide of copper is a non-conductor, and is precipitated into the electrolyte, where it gradually dissolves under the action of the free acid. It thus diminishes the amount of free acid in the electrolyte, and increases the quantity of copper in solution.

Sulphide of Copper.—When the quantity of sulphide of copper contained in the anode does not exceed that in ordinary black copper, it passes almost entirely into the electrolyte without being decomposed; but when present in large quantity, it is decomposed by the current, with liberation of suphur.

Silver, Gold and Platinum.—These metals do not dissolve in the electrolyte so long as their quantity is not great and the electrolyte contains the normal amount of free acid and copper in solution. If, however, the solution becomes neutral, the silver is dissolved and deposited on the cathode with the copper.

Bismuth and its Oxide.—A part of these passes into the electrolyte in the form of insoluble basic salts, while a portion is dissolved by the electrolyte and deposited. Therefore bismuth impoverishes the bath in copper, since it reduces the amount of free acid. There is no deposit of bismuth on the cathode, even when large quantities in the form of basic salts are present in the electrolyte.

Tin.—Tin is dissolved by the electrolyte, and finally deposited in the form of a basic salt. When its quantity is considerable, the greater part remains upon the anode as basic sulphate, which, when moist, is of a clear gray color, but on drying turns white. The presence of tin is very advantageous, since it diminishes the quantity of copper in the bath and increases the amount of free acid. When copper is deposited from a pure solution, the product is non-homogeneous and brittle; but, when tin is present, in the solution, the copper is deposited in a very homogeneous and malleable condition. Tin also considerably reduces the resistance of the bath.

Arsenic.—When arsenic is present in the anode in the metallic condition it passes into the electrolyte in the form of arsenic acid and is not deposited until the solution becomes saturated. The arsenic acid in the electrolyte is gradually dissolved by the secondary action of the free acid. Metallic acid, therefore, diminishes the quantity of copper, and increases the amount of free acid in the bath, since it passes into solution without combining with its equivalent of acid, while a corresponding quantity of copper is deposited, setting the acid free. But when arsenic is present in the form of arseniate of copper or other metals, it passes into the electrolyte without change, for these compounds are non-conductors and the effect is that the free acid is gradually neutralized. Arsenic is not deposited upon the cathode with the copper so long as the bath remains normal as to the amount of copper and free acid; but in a neutral bath, with an insufficient quantity of copper, arsenic is deposited upon the cathode with the copper.

Antimony.—Metallic antimony has the same effect as tin. With an acid or neutral electrolyte it passes partly into solution and is deposited later in the form of a neutral salt, and partly remains upon the anode in the form of basic sulphate, which, under the action of the air, behaves like tin. Antimony diminishes the quantity of copper in solution. The current has no effect upon the antimony compounds in the anode; they pass, without change, into the electrolyte, where they are gradually decomposed by the action of free acid, freeing antimonic acid and rendering the neutralization of the solution necessary. The antimony is not deposited when the copper and acid contents of the bath are nearly normal. It may be deposited with the copper if the solution becomes neutral; but if the solution contains an insufficient quantity of copper, the antimony is deposited upon the cathode, even when the bath contains a considerable amount of free acid.

Lead.—The current acts more quickly upon lead than copper, and the lead passes into the electrolyte as insoluble sulphate. It is not deposited upon the cathode.

Iron, Zinc, Nickel, Cobalt.—These metals are more completely dissolved by the action of the current than copper, so that the solution becomes more neutral and richer in dissolved metals. Metallic iron is always dissolved as ferrous oxide, which is changed by the action of the air to a ferric oxide. The oxides do not form upon the anode unless the current equals 1,300 amperes per square metre; but currents of this intensity are never used in the refining of copper. Sulphide of iron in the anode goes into solution as ferric oxide.

All the reactions described take place more or less simultaneously, according to the composition of the anode. The precipitate in the electrolyte may contain gold, platinum, silver, oxide and sulphide of copper. Basic sulphates of bismuth, sulphate of lead and other insoluble matters are generally present in the anode, and a small quantity of finely divided metallic copper.

Atomic Weight of Palladium.—A. Joly and E. Leide have determined the atomic weight of palladium and announce 105·438 as the mean of their experiments. They propose redetermining the atomic weights of all the platinum metals.

A Lake Ore Carrier.—The new steamer "Centurion," on which work has been begun at the Wheeler yard in West Bay City, Mich., is 378 ft. long, 45 ft. beam and 26 ft. molded depth. She is of unusual strength for a lake carrier, frames and plating being heavy and the plates triple riveted. In the double bottom 1,600 tons of water can be carried. The engine is of the vertical triple-expansion type, with cylinders 23 in., 37½ in. and 63 in. in diameter, with 44 in. stroke. There are three cylinder boilers 12 ft. 6 in. in diameter and 12 ft. 8 in. long, built for a working pressure of 170 lbs. Each boiler has three 40-in. corrugated furnaces.

* Translated from the French of M. Hippolyte Fontaine.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY

Department of the Interior.

MINING CLAIM—PLACER LOCATIONS—HOMESTEAD ENTRY.

1. A placer location made in accordance with law operates to exclude the land embraced therein from other appropriation; and a homestead entry irregularly allowed for such land does not impair the rights of the mineral claimant.

2. An entry, though irregularly allowed for land not subject thereto, should not be canceled without giving the entry-man an opportunity to be heard in defense of his claim.—In re Peru Oil Company (involving claim to properties entered at Los Angeles, Cal., land office).—(Decision, February 13th, 1893.)

PLACER LOCATION—STONE LAND—SETTLEMENT RIGHT.

1. Land chiefly valuable for the building stone it contains is not by such fact excluded from entry under the settlement laws.

2. Prior to the act of August 4th, 1892, there was no authority for a placer location in land chiefly valuable for a deposit of common building stone, and a location of such character will not defeat a subsequent settlement claim initiated prior to the passage of said act.—Clark et al. vs. Ervin (involving land located and entered at Rapid City office, S. Dak.)—(Decision, February 13th, 1893.)

Supreme Court of Pennsylvania.

OPERATION OF MINE CAUSING DEPRESSION OF LAND.

Where the surface of land leased for mining purposes is injured because of sinks and depressions resulting from the lessee's negligence in operating the mine, the lessor's measure of damages is the depreciation in the value of the land. (McGowan v. Bailey; 25 At. Rep., 648.)

RIGHT OF GRANTOR TO REACH UNDERLYING OIL.

Where the owner of land conveys the coal under the surface, he retains the title to everything beneath the coal, and has the right of access to it, though the deed does not expressly reserve such right. In such case the grantee, though he owns the fee in the coal, is not entitled to an injunction restraining the grantor from boring through the coal to reach gas and oil found to exist beneath it, but will be protected by the decree as far as possible, with due regard to the rights of both parties, and then left to his remedy at law. (Chartiers Block Coal Co. v. Mellon, 25 At. Rep., 597.)

Supreme Court of Missouri.

ISSUE AND PAYMENT OF STOCK IN MINING CORPORATION.

Persons desiring to develop certain coal land on which they had options entered into a contract to form a corporation with a paid-up capital of $1,000,000. The land was to represent the entire assets of the corporation, and was to be paid for by the issue of $300,000 in bonds. All money expended in the purchase and development of the land was to be refunded to the person expending it. One of the parties was to receive, for selling the bonds and organizing the corporation, paid-up stock to the amount of $400,000. Another was to receive, on contracts and options on which he had advanced but little, if any money, stock to the amount of $325,000. The contract was void, under the statute prohibiting the issue of stock, except for money paid, labor done, or property actually received, and all fictitious increase of stock or indebtedness, and providing that 5%, at least, of every subscription shall be paid in money at the time of the subscription, and that none shall be received without such payment. The fact that the contract provided for turning over the land at actual cost to the corporation could make no difference, since it was apparent on the face of the contract that the land and services were not a fair equivalent for the stock to be issued. (Garrett v. Kansas City Coal Min. Co.; 20 S. W. Rep., 966.)

Siberian Exposition.—An exhibition of Siberian products is to be held in Moscow in 1895. The object is to bring to the notice of European nations the natural resources of Siberia, in view of the opening up of the country by the construction of new railroads. Minerals and mine products will have a large part in the exhibition.

Metallurgical Production of France in 1891.—The "Societe Generale Francaise d'Exploitation et de Traitement de Minerales" gives the following as the metallurgical production of France during 1891: Gold, 220 kilos, value, $140,800; silver, 71,303 kilos, value, $2,281,696; lead (from ores), 6,680 tons. value, $417,116; litharge, 63 tons, value, $3,906; lead (desilverized), 28,581 tons; copper, 2,125 tons, value, $635,470; zinc, 20,596 tons, value, $2,070,332; nickel, 330 tons, value, $336,000; aluminum, 36 tons, value, $85,320, and antimony regulus and sulphide, 880 tons, value, $177,155 To this is added 682 tons of argentiferous copper matter produced in Algeria, value, $54,909, making a total value of $6,202,904.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office:

TUESDAY, FEBRUARY 28TH, 1893.

492,382. Apparatus for Recovering Alkali. Henry Blackman, New York, N. Y.
492,400. Coke Oven. Gustave Hoffmann, Gottesberg, Germany.
492,425. Amalgamator. Charles C. Ormsby, Waterford, N. Y.
492,426. Process of Amalgamating Ores. Charles C. Ormsby, Waterford, N. Y.
492,623. Dumping Wagon. Daniel F. Donegan, Los Angeles, Cal.
492,634. Ore Crushing Mortar. Adolph Schulenburg, San Francisco, Cal.
492,679. Process of Converting Malleable Iron into Steel. Anthony J Hindermeyer, Philadelphia, Pa. Assignor to Mary A. Hunter and Maria W. Hunter, same place.
492,711. Ore Amalgamator. John E. Chaster, Shawlands. Assignor to the Regent Gold Extracting Co., Ltd., Glasgow, Scotland.

PERSONALS.

Mr. C. H. Hall, of the Lake Superior Iron Company, has returned from Florida.

Mr. Charles Lawton, of the Platt Iron mine, in the Lake Superior region, has accepted a position with a North Carolina Company.

Mr. T. A. Rickard, mining engineer, of Denver. Colo., is now in Arizona engaged in a professional examination of the Mines of the Mammoth Gold Company, Limited.

Mr. Edward Halse, mining engineer, of London, has just returned from a professional visit to Mexico, where he examined gold and silver mines in the interest of English capitalists.

Gen. Thomas T. Eckert has been chosen president of the Western Union Telegraph Company, to succeed the late Dr. Norvin Green. General Eckert has been vice-president and general manager of the company for several years past.

Mr. Theodore N. Ely has been appointed chief of motive power of the Pennsylvania Railroad, the office being a new one. His successor as general superintendent of motive power is Mr. F. D. Casanave, recently in charge of the company's lines west of Pittsburg.

OBITUARY.

Hugh Kirk, the pioneer prospector of Texada Island, B. C., was lost in a snow storm, which began February 1st, and has not yet been traced. It thought that he has perished. He has relations in Jersey City.

Henry Martin, a part owner in the Brown Bear gold mine, Trinity County, Cal., and widely known on the Pacific coast, died February 27th in San Francisco. He was 54 years old, a native of Maine, and went to California early in the sixties. His estate is estimated at about $1,000,000, all of which was made in mining. He leaves a widow but no children.

Col. Thomas Jefferson Boyd, of Virginia, died at his home on the 16th ult., aged 89. Colonel Boyd was born, raised and educated within a few miles of Monticello, the residence of Thomas Jefferson, with whom he was on terms of friendship. He was greatly interested in the development and progress of the entire country, but more particularly of the railroad and canal extensions of Virginia and the development of the mining industry of that State. In 1883 he entertained a joint excursion of the Institutes of Civil and Mining Engineers at his home.

H. R. West, formerly of Denver, Colo., but latterly of Chicago, died on the 23d ult., at his residence in that city. Mr. West was one of the best known mining machinery men in the West, and his indefatigable work contributed in no small degree to the success of Frazer & Chalmers, and more recently to that of the Chicago Iron Works. Within a few days of his death Mr. West remained in harness, and he would not take a rest until the ravages of phthisis forced him to. Personally he was one of the most genial of men, and his death, at the early stage of 35, will be universally regretted.

James McArthur died on the 7th inst. at Chicago, Ill. He was born in 1832, near Mount Morris, Livingston County, N. Y. He received a liberal education, early displayed great proficiency in mathematics and the sciences, and in later years had been a profound student of political economy and constitutional history. In 1867 he took charge, as engineer, of the improvement of the Kanawha River, and in 1860 went to Marietta, O., in order to promote the organization and carry forward the construction of the Cleveland & Marietta Railway. This undertaking successfully accomplished, he became in 1876 a citizen of Chicago, and a member of the present firm of McArthur Brothers. He was a civil engineer of large attainments, and with extended and diversified experience in the building of railroads, canals, locks and other large public enterprises.

SOCIETIES.

National Electric Light Association.—At the recent convention in St. Louis the following officers were chosen: President, E. A. Armstrong, Camden, N. J.; first vice-president, M. J. Francisco; Rutland, Vt.; second vice-president, C. H. Wilmerding, Chicago, Ill.; executive committee, John A. Seeley, New York; E. F. Peck, Brooklyn, N. Y.; A. J. De Camp, Philadelphia; W. J. Morrison, Woodstock, Canada; H. S. Smith, New York; G. H. Baxter, Pittsburg, Pa.

Association of Engineers of Virginia.—At the Annual meeting in Roanoke, Va., February 22d, the following officers were elected: President, Charles S. Churchill; first vice-president, J. C. Rawn; second vice-president, Prof. J. H. Fitts; secretary, L. J. Carmalt; treasurer, J. R. Shick; directors, Geo. R. Henderson, Geo. P. Wood, R. H. Soule, Clarence Coleman, S. G. Gaillard, M. E. Yeatman. Several papers on heating and ventilation of buildings were read.

Boston Society of Civil Engineers.—A regular meeting was held February 15th. A full account of the work of the Massachusetts Highway Commission was given by Mr. W. E. McClintock. The discourse was illustrated by a large number of lantern views showing the condition of the roads throughout the State. Mr. E. W. Howe showed by lantern views roads built in the Boston parks, and Mr. E. F. Foss, of the Massachusetts Institute of Technology, gave some interesting views of roads in Chicago and Buffalo. A general discussion on road construction followed.

Engineers' Society of Western Pennsylvania.—The regular meeting was held in Pittsburg, February 21st. Mr. Chas. H. Nichols read a paper on "The Howe Truss Bridge." The Chemical Section met on February 28th. The following communications were presented: "The Apparent Weathering of Pig Iron," by Dr. A. B. Harrison; "Properties of Very Pure Iron," by Chas. J. Pedder; "Solubility of Barium Sulphate in Acid Chloride of Iron Solution," by Dr. Chas. B. Dudley; an address on "The Segration of Impurities in Steel," by Walter E. Kock, and a paper on "The Use of Bone Black in Domestic Water Filters," by R. Neilson Clark, M. E.

INDUSTRIAL NOTES

Copake furnace, in Columbia County, N. Y., has gone into blast after a short stop for repairs.

The new steel foundry of the General Electric Company, at Lynn, Mass., has been started up. It will melt and cast 30 tons of steel per day.

The Youngstown Bridge Company, Youngstown, O., is building an iron highway bridge, 1,352 ft. long, over Bohemia River, in Cecil County, Md.

The Roanoke Rolling Mill Company's property, at Roanoke, Va., is to be sold under order of court to satisfy the claims and judgments against the property.

The Lassig Bridge and Iron Works, Chicago, Ill., have the contract for the ironwork for the new docks at Duluth, Minn., for the Duluth & Iron Range Railroad.

The Goff Steel Company, Pittsburg, Pa., succeeds the Iron and Steel Band Company, and will continue to operate the works at Wilson, Pa., making steel and iron bands and hoops.

The Cleveland Steel Casting Company has been organized in Cleveland, O., with $100,000 capital, and has let contracts for an iron building, 96 × 265 ft., and for a 10-ton Siemens-Martin open-hearth furnace.

The Bodwell Granite Company, of Rockwell, Me., has been awarded the contract for the new post-office in Washington, D. C. The granite work will be done at Vinal Haven, Me., and that part of the contract aggregates $500,000.

The Troy Steel and Iron Company, Troy, N. Y., has re-elected the old board of trustees, with the exception that John B. Archbold was chosen in the place of the late O. B. Jennings, and J. W. Cox in place of C. E. Dudley Tibbits.

The Berlin Iron Bridge Company, East Berlin, Conn., is building a car shed, 103 × 300 ft. in size, with brick walls and iron roof, for the North Shore Traction Company, at Lynn, Mass. The same company is building an addition to the carshed of the Wilmington, Del., city railroad.

Queen & Company, Incorporated, of Philadelphia, are introducing the Bachelder Steam Engine Indicator. This indicator is a new departure, the important feature being the flat adjustable spring by which a change can be made from one scale to another by a simple adjustment of the fulcrum, thus avoiding the extra expense and necessity of carrying a series of spiral springs. This house has also this year put on the market a line of steam and pressure gauges of its own make, for which great accuracy is claimed.

The Pottstown (Pa.) Iron Company's creditors held a meeting in Philadelphia, March 3d, when a committee of five was appointed to co-operate with the receivers as an advisory committee for the furtherance of the best interests of the creditors, and for the carrying on of the business in conjunction with the receivership. A statement from John Sparhawk, counsel of the company, shows the assets to be $2,806,061, and the liabilites $1,703,101. The total capital stock of the company, $884,800, was shown to be protected. The appraisers, James C. Brooks and John L. Weiner, say they found the works of the company to be modern, well equipped, in good order and in operation. They put the valuation of the plant at $2,474,033. This is $76,181 more than is shown by the books of the company. The actual amount owing to the creditors is $1,703,101.

The Ashcroft Manufacturing Company, New York, has issued a pamphlet on the Tabor indicator, which almost deserves to be called a treatise on the use and care of the indicator generally. Besides a description of the special instrument which the company manufactures, it has chapters on the indicator diagram and its essential features; the method of constructing curves; methods of measuring and plotting diagrams; method of computing the amount of steam accounted for by the diagrams and the general uses and applications of the indicator. The Tabor indicator is of the same class as the Thompson, its special peculiarity being in the means used to give a straight line movement to the pencil. The motion is simple, the parts few and light, and the whole arrangement such as to secure a quick response to the action of the steam pressure, making it especially adapted to use with high-speed engines. In use it has given satisfactory results with engines running up to 350 revolutions per minute, and with very high pressures. The pamphlet has 134 pages, is illustrated with engravings of the Tabor indicator itself, of several forms of planimeters, and a large number of specimen diagrams. It is sold for $1.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting machinery or supplies of any kind will notify the Engineering and Mining Journal of what he needs, his "Want" will be published in this column and his address will be furnished to any one desiring to supply him.

Any one wishing to communicate with the parties whose wants are given in this column can obtain their address at this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the Engineering and Mining Journal are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

Goods Wanted at Home.

2,967. A complete outfit of machinery for manufacturing fish barrels. North Carolina.
2,968. A double surfacer with broken roll. Georgia.
2,969. A stave saw. North Carolina.
2,970. An engine. South Carolina.
2,971. A planer. North Carolina.
2,972. A header. North Carolina.
2,973. A saw mill. South Carolina.
2,974. Whisk broom and brush supplies, such as fancy metal and perfume handles, India fiber and Mexican fiber. Georgia.
2,975. Drill presses. Texas.
2,976. A grist mill. South Carolina.
2,977. Engine lathes. Texas.
2,978. Prices, etc., on a complete outfit for a yarn mill of 1,000 spindles' capacity, to make knitting yarn. North Carolina.
2,979. A gin press. South Carolina.
2,980. Emery wheels. Texas.
2,981. A thresher. South Carolina.
2,982. Grindstones. Texas.
2,983. A 6 or 8-stamp prospecting mill. Virginia.
2,984. Coffin hardware and hard wood—oak, ash, hickory, poplar, etc. Texas.
2,985. Catalogues, price lists, etc., of manufacturers of barrel hoop machinery. Alabama.
2,986. A stone crusher, capacity about 7 cubic yards per hour, to rent for about six months. New York.
2,987. A well boring machine that will bore 1,000 to 1,500 ft. through sand and sand rock. Texas.
2,988. Prices on material for two miles of road, horse line. West Virginia.
2,989. A roller corn mill. Kentucky.
2,990. A good second-hand air compressor. Ohio.
2,991. Hardware, iron, guns, etc. Kentucky.
2,992. A good second-hand 4-saw gang edger. West Virginia.
2,993. Assayer's outfit, including scales, furnace, supplies, etc. New York.
2,994. Three iron door shutters, three iron window shutters and tin roofiing for a house, 30 × 80. Louisiana.
2,995. Heating apparatus and furniture for a church. Alabama.
2,996. A bolt heading machine. Arkansas.

GENERAL MINING NEWS.

A late dispatch from Duluth, Minn., states that a combination has been effected between the iron ore producers on the Gogebic Range and the owners of the producing mines on the Mesaba. A conference was held in New York, in which representatives of the Gogebic mines and the Rockefeller-Wetmore syndicate, which has just acquired large Mesaba holdings with the Merritts, took part. The arrangement, it is said, is not a pool, but a mutual understanding which will absolutely prevent the cutting of prices.

ARIZONA.

Yavapai County.

(From our Special Correspondent.)

Agua Fria.—A rich strike of ore is reported here, about 30 miles from Prescott. The location is near the Big Bug district, which for over a year past has been producing so much rich ore. The ore from the new field assays $3,000 per ton, and is considered so valuable that it is sacked as soon as hoisted out, and guarded night and day.

CALIFORNIA.

Mono County.

(From our Special Correspondent.)

Summit Mining Company, Bodie.—A test run is to be made at the Cannonball mill with a device of Superintendent Kinkead, of Virginia City.

Nevada County.

Champion Mining Company.—The new hoisting works at this mine are nearly completed, says the Nevada "Transcript," and as soon as finished the company will put a force of men to work widening the shaft. At present 30 stamps are kept running. Hoisting works will be erected on the old Merrifield mine, owned by the Champion company, next summer.

Placer County.

Gray Eagle Mining Company.—George Frederick Stone, an owner of shares of stock of this company, has brought suit to recover $1,000 from the directors of that company as a statutory penalty for failure to compel the superintendent of the mine to file with the secretary an itemized account of receipts and disbursements made by him, as required by law.

Mayflower Gravel Mining Company.—A shipment of bullion, valued at $6,300, has been received at the San Francisco office of this company.

San Bernardino County.

(From our Special Correspondent.)

Vanderbilt Mines.—There has been placed on record a deed conveying two gold mines, known as the Gold Bar and Gold Bar Western Extension, with water right and mill site, to W. S. Lyle for a consideration of $40,000. It is understood that the Bonanza firm are behind the old Quijotoa manipulator. Mr. Lyle sank 8 shafts, varying in depth from 40 to 100 ft., and prospected 600 ft. of the ledge. The main ledge was found to be from 15 to 30 ft. wide, the pay streak from 4 to 8 ft. Underneath the decomposed croppings the ore was found to be a sulphuret, and a quantity of rock milled in San Francisco returned $40 per ton. Other experts, who have been on the ground and examined the ore, make a different statement. It is denied that a pound of $40-rock ever came from the mines.

California Mining and Development Company.—This corporation has been formed for the purpose of working the mines at Vanderbilt, the capital stock being set at $10,000,000. The incorporators are J. W. Mackay, W. S. Lyle and G. R. Wells, with $2,500,000 each; J. L. Flood, $2,490,000 and J. E. Walsh, $10,000.

San Diego County.

(From our Special Correspondent.)

The Stonewall Mine.—Before the death of Governor Waterman, the mill was running 20 stamps on ore, but for some unknown cause the mine was shut down at his decease, and allowed to fill with water. Three months ago 10 stamps were started on rock accumulated on the dump when the mill shut down. There is now every hope of work being again started in the mine; the machinery, etc., are being overhauled and put in working order, and during the coming season full work will be resumed.

In the Cascade, about six miles from Stonewall, a mine has been opened which promises excellent returns. Two shafts have been sunk on the ledge to a depth of 40 ft. and 180 ft. apart. In the north shaft the ledge is split, but carries rock on an average of 10½ ft. in thickness, with gold evenly distributed. In the south shaft the ledge was 2½ ft. thick on the surface, widening to over 14 ft. of solid quartz at 38 ft. deep, carrying gold from wall to wall, with an unusual amount of iron pyrites and sulphurets. The foot wall of the ledge is syenite, and the hanging wall grey schist. A mill is to be erected this season, and already there are 85 tons of ore on the dumps.

Sonoma County.

E. K. Stevenot, metallurgical chemist and mining engineer of Sonoma, has proposed to erect a chromate of potash factory at Sonoma, as he claims to have a cheaper process than the old one. He believes that chemical works in Sonoma would prove a good investment, as according to estimates the works would pay over 15% on the capital invested. At present there are only two chemical works in the United States that manufacture chromate of potash. One is located at Baltimore and the other at Philadelphia. Both are purchasing chrome iron ore in California, as it is not mined in any other part of the United States. This ore is to be found in abundance in Sonoma County and, in fact, in half of the counties of California. Chromate of potash is used for dyeing purposes, for the manufacture of colors, for electric batteries and a number of uses in the arts. Besides the total production by the Baltimore and Philadelphia works, nearly 1,500,000 lbs. are annually imported from Scotland into the United States.

COLORADO.

Clear Creek County.

Freeland.—A great deal of ore is being shipped. The Anchor, the Gum Tree, the Turner and other mines have a great deal of ore in sight. The old Freeland mine has been taken in hand by an energetic set of lessees.

Turner.—H. N. Moore & Co., lessees of this mine at Freeland, have opened up a large body of galena ore, says the Georgetown "Courier." The lessees make their shipments in lots of 45 to 50 tons, and the ore is said to net about $35 a ton.

Dolores County.

Enterprise Mining Company.—The shipments at present from the Enterprise average four cars per day, says the Rico "News." In a few days it will be increased to five cars per day.

El Paso County.

Anaconda Mining Company.—The mine resumed work on the 1st inst., after being shut down for nearly five months. Only a small force was put to work, the intention being to develop the property and get it into shape for an extensive output when the French mill is started in April, as the company is under contract to furnish the mill 40 tons of ore daily. The mine will be in charge of Mr. Hoskins.

The following items of Cripple Creek news are taken from our exchanges:

About 70 men are at work on the big mill of the French syndicate in Squaw Gulch. It is expected to have the mill ready to begin work on Anaconda ore about April 1st.

J. T. Moynahan, of Leadville, has secured a three years' lease on the Moreland, Dark Horse and Pike's Peak placers, properties of the Pike's Peak Placer Company. The consideration is 10% of the net output, to be paid monthly.

Calumet Company.—The agreement for a compromise between the directors and the lessees of the Burns lode involves the reorganization of the company with a capital stock of $1,200,000, the old company to receive half and the lessees half.

Jack Pot Company.—This company, working in the Gettysburg claim, broke into a spur of the Work Company's Morning Glory vein. It is good milling ore.

World Mining and Milling Company.—This company has bought a hoisting plant of the Moynahan Machinery Company. It will be erected on the Hidden Treasure.

Lake County.

The following items of Leadville mining news are taken from our exchanges: The Colonel Sellers is under lease for the greater part at present, the output being sufficient to keep the mill on the property busy. Upward of 100 tons of concentrates are milled daily on the Pawnolos. The main drift, which is being carried steadily forward, is through very hard limestone, and progress is slow. Recently high-grade carbonate was broken into in the Penrose, which assayed in part 500 oz. to the ton. Work has progressed steadily on the property since then, the ore shipped averaging nearly 400 oz. to the ton. Work is at present being carried on in the main drift, near the Orion line, large quantities of carbonate ore, rich in chloride, being extracted. The Sixth Street shaft is at present sinking, and it is anticipated the ore body which has been met with will be uncovered soon. The A. Y. & Minnie continues a steady shipper, shipments approximating close to the average, which is from 1,800 to 2,000 tons per month of fair grade mineral. The Marion Mining Company, a syndicate of Eastern capitalists, has lately resumed operations on the R. A. M. mine, adjoining the Mikado. It is the intention of the owners to sink the shaft to a total depth of somewhat more than 1,000 ft. By this means it is expected that the ore plane of the Mikado will be intersected. The smelters continue fairly active, considerable difficulty having of late been experienced in obtaining supplies on account of the severity of the weather. This circumstance has now disappeared, and operations will probably soon be resumed on a large scale.

Iron Silver Mining Company.—The case of Peter Campbell et al. against this company (see last week's Engineering and Mining Journal) has been decided in favor of the plaintiffs.

Ouray County.

The National Belle, Cora Belle, Carbonate King, Hudson, Congress and, in fact, all the prominent producers in the Red Mountain district, are greatly hindered by the terrible and continued snowstorms, and can do nothing but development work and fill up the ore houses until the roads can be opened. All are showing well. Three heavy producers were forced to close down temporarily—the Guston, because not a pound of ore can be shipped on account of the snow blockades on the Silverton railroads; the Mineral Farm, for lack of water with which to run the mill, and the Slide because of the continued low price of silver. All three will resume active work and shipments, however, as soon as the causes leading to their stopping are obviated. The ore bodies and reserves of the Guston are reported to be showing as well as ever in its history.

Pitkin County.

Durant Mining Company.—An important mining suit was begun in the District Mining Court, at Denver, on the 2d inst. John C. Bates is the plaintiff and the Durant Mining Company is defendant. The suit involves the ownership and possession of the famous Bonnybel mining lode on Aspen Mountain in the Roaring Fork district. The complainant declares that he has been for years the owner of the Bonnybel mining lode; that in following the vein he has encountered certain perpendicular workings of the Durant company outside of the plaintiff's side lines, and the Durant company has ousted him from possession of the ledge. He states that he has already defeated the Durant company in two suits in the United States courts, but that Dan Hyman, president of the defendant company, is endeavoring to put him to heavy expense in litigation, and besides that the company is preparing to take out ore from a rich body in the vein.

GEORGIA.

Floyd County.

(From our Special Correspondent.)

The plant recently erected at Rome, in this county, to treat bauxite ore and to manufacture aluminum, is in active operation, and running on ore from Ridge Valley, Ga. The bauxite banks at Ridge Valley were the first producers of bauxite in the State, shipments being made from there as early as in 1889. In a future letter I hope to be able to give the readers of the Engineering and Mining Journal a description of the plant and process. The Asbury brown ore and manganese deposits, which I visited recently, are located about two miles east of Cave Spring. The existence of brown ore on this property, which consists of 430 acres, was first discovered several years since by prospectors for copper. A shaft 83 ft. in depth was sunk through brown ore from the surface and abandoned by the prospectors. For several years afterward the property was cultivated as farming land, that portion where the outcroppings seriously interfered with cultivation being allowed to remain wild. The distance from the railroad has always been regarded as a barrier against shipment until recently, when the attention of the managers of some of the charcoal furnaces was directed to the quality of the ore. Several analyses showed that it carried as high as 55% metalic iron 1·24 manganese, 6% silica, and from ·033 to 1% phosphorus. The quantity of brown ore in this section, carrying a sufficiently low percentage of phosphorus for the manufacture of first class car wheel pig iron, is quite limited ,and for that reason the Bass Furnace at Rock Run, Ala., and the Rome Furnace, at Rome, Ga.,were both anxious to obtain this ore. Last year about 8,000 tons were shipped from the banks screened, but operations were suspended, because by screening a large proportion of good ore was wasted, as the dumps to-day show to have been the case. It is now proposed by the Asbury Brothers, the owners of the property, to erect a double log washer and recommence shipping. The ore from this property commands a sufficiently high price to warrant the payment of 50 cts a ton, wagon haul to the railroad, which, at the present market price of average brown ore would be out of the question. The extent of the deposits cannot be estimated because but little work has been done except at one bank, however, the surface indications are very positive over a large area, and at many different points. The presence of several deposits of manganese ore on this property has been determined, and although a small quantity has been shipped, which, when analyzed, showed 46% manganese, yet no work of a development nature has been attempted. For some years past shipments of manganese ores from this county have been made, and a limited amount is still being shipped by J. H. Couper, of Cave Spring. But the cost of mining, hauling and freighting to the Eastern market leaves the margin of profit so small that owners of manganese deposits prefer to await the establishment of a home market. In this portion of the State, the surface indications warrant the statement that the extent of the manganese deposits is of considerable magnitude. From mines which have already been opened, and shipments of ore made, the output would be sufficient to warrant the erection of a plant in this vicinity to treat this ore.

Polk County.

(From our Special Correspondent.)

The property known as the Hematite Banks, owned by the Polk County Iron and Railroad Company, situated on the line of the East Tennessee, Virginia & Georgia R. R., after lying idle for several years, has been leased by Sparks and Wimley, of Cave Spring, who are now engaged in prospecting, and shipping samples to several furnaces for approval. If successful in obtaining contracts for shipment, this property will take rank with the producers. On the Oredell property, one mile south of the last named, a second washer will be started in a few days, to wash the product of a new bank recently discovered and being developed. The ore is of soft grade similar in appearance to that now being shipped from the same property to the Bass charcoal furnace at Rock Run, Alabama. Nearly all the brown ore properties along the line of the East Tennessee, Virginia & Georgia Railroad in Northwest Georgia and Northeast Alabama are being operated at the present time, and the product shipped to the coke and charcoal furnaces in Alabama and Tennessee, the average output of all combined being about 200 tons per day, but this will be increased as the weather becomes more settled, and work can be carried on more regularly. The number of properties producing at this time greatly exceed that of last year.

IDAHO.

Alturas County.

Star Mining Company.—The men working for this company have struck. According to the Idaho "Statesman," they have received no wages for two months.

Coeur d'Alenes.

Last Chance Mining Company.—The suit between the company and the Tyler Mining Company has, according to an Associated Press dispatch, been decided by the United States Circuit Court in favor of the latter.

Wardner.—A press dispatch from this place states that the Bunker Hill and Sullivan mines have been closed down for an indefinite period. It is rumored that other properties in this locality will also be closed.

Kootenai County.

Captain Symons, of the United States Engineer Corps, in his report to General Casey, recommends the improvement of the Kootenai River. He describes that part included in Montana as a navigable highway, already navigated in part by steamers. He says: "My examination was limited to that portion of the Kootenai River northwardly from Fry to the boundary line. At the town of Fry, which is practically the head of navigation of the lower Kootenai, the Great Northern Railroad, in its course from west to east, first reaches the river; here connection is made with steamboats for the fertile country along the river, both on the American and Canadian sides, and for the rich mining districts in the Kootenai and Slocan countries. It is now practically certain that the Slocan and Kootenai mining districts embrace some very rich and extensive deposits of mineral, and their development will add to the importance of the watery highways of the Kootenai River and lake. Besides Fry or Bonner's Ferry, the principal towns on the river and lake are: Nelson, which is the shipping point for the Toad Mountain mines, and from which a road is built from the westward, connecting the navigable waters of the Kootenai Lake with the navigable waters of the Columbia River; Kaslo, which is the shipping point on the lake for the Slocan mines; Ainsworth, which is the shipping point for the Hot Spring mines; and Pilot Bay, at which point a large smelter is being erected for the reduction of ores tributary to the lake. All these towns except Fry, are in British Columbia. The Kootenai River freezes up each year about January 1st, and remains closed until the middle of March. The lake itself never freezes. There are on the river and lake, a number of steamboats plying. Those of which I learned and saw were, first, the Nelson, of about 312 tons burden; the Spokane, of about 250 tons burden; the Galena, Ainsworth, Idaho, Surprise and Alton, of smaller capacity than those first named."

INDIANA.

The Indiana bituminous coal operators met in conference at Terre Haute, on the 7th inst., and discussed the wage question. No action was taken. The miners met at Columbus, O., on the 24th inst., and will probably ask for higher wages.

Oil Production.—The well report for February shows that 30 new wells were completed, having a total production of 913 barrels daily, against 20 wells with a production of 1,020 barrels in January. At the close of the month there were 19 wells under the drill.

MICHIGAN.

Copper.

Atlantic Mining Company.—The output for February was 215 tons of mineral, against 193½ tons for the same month in 1892.

Franklin Mining Company.—The output for February was 183 tons of copper. It is reported that the annual report will show a surplus of $10 per share.

Houghton.—A press dispatch states that the snow blockade at this port has been raised. No ore trains have been run from the Osceola, Tamarack and Kearsarge since March 4th. The stamp mills of the Osceola and Tamarack mining companies started crushing on March 5th.

Osceola Mining Company.—The annual meeting was held at Boston, March 9th. The old directors were re-elected.

Iron.

(From our Special Correspondent.)

Hamilton and Ludington.—It is feared that when water is pumped from the mines great falls of ground will occur, as the water has seeped into the ground surrounding the shaft.

Huron Bay Ore Dock.—This dock at Ishpeming is completed. It has 112 pockets and a capacity of 20,000 tons. A consolidation of the Huron Bay road, which terminates at Champion, with the Ishpeming & Lake Superior road, is now talked of This will make a line running through an entirely new mineral and timber country with harbor facilities at both ends.

Superior-Wisconsin Dock.—One thousand feet are to be added immediately to this ore dock. The bear talk regarding the outlook this spring is not supported, at least by railroad builders and ore dock makers.

Iron—Gogebic Range.

Colby Iron Company.—About 600 men are employed. Sinking is going on in shafts Nos. 8, 9 and 10, which are now down 640, 480 and 400 ft., respectively, and the mine is now opened so one can walk from No. 5 to No. 9, the distance of upward of half a mile underground, says the Gogebic "Iron Tribune." At No. 6 Palms, the union shaft on the line between the Colby and the Palms properties, cross-cutting and development work is being prosecuted. New machinery is being added constantly, and the Colby now presents a well equipped mine.

Iron—Marquette Range.

Lake Superior Iron Company.—This company has struck a magnetic slate ore in two stopes, at a depth of between 600 and 700 ft., at the No. 7 shaft. This is the first magnetic ore found in the mine to our knowledge, says "Iron Ore," and a magnetized slate ore is something new to the range also. The ore contained 71% in iron and .071% phosphorus. The quantity is probably not large, the stopes in which it is found possessing a thickness of about 12 ft.

Iron—Menominee Range.

Hemlock River Iron Company.—No work is being done on the 1st level, all the ore having been roomed out save a few pillars. The 2d level south from B shaft has been drifted through a distance of 800 ft., removing ore only to the width of the drift. B shaft, which late last fall was sunk to the 3d level, has now been lowered 60 ft., and will soon open the 4th level at 80 ft. on the incline. At the 3d level drifting has been continued toward A shaft and also south of B shaft. On this level the ore encountered has been of an improved quality, as compared with that of the levels above. As little stoping as possible is being done, the saving of the cost of rehandling the product from stock dock to car being in view.

Exploratory operations in lots numbered seven and eight, in Section 29, 43-31, have been undertaken by the Chicago, Milwaukee & St. Paul Railway Company. Mr. J. Parke Channing, of Iron Mountain, having charge of the work, says the "Diamond Drill." The fractional forties in the option are about one mile south of the Mansfield mine. Considerable exploratory work has heretofore been done on the land, but resulted in nothing. Messrs. King & Wheeler, the Mahoning Valley furnacemen, put down numerous test pits, but did not locate the ore body, which conservative mining men are confident exists there, being the south continuation of the Mansfield vein of Bessemer ore. It was impossible to handle the water by windlass at any great depth, and the option was finally relinquished, the land to remain idle until the present company took hold of it.

Loretta.—The shaft is down 100 ft., and the cross-cut north shows 20 ft. jasper, 19 ft. soapstone, 100 ft. good ore and 22 ft. of quartzite and ore, then a drift was started east and west at 100 ft., and 75 ft. of ore was passed through, says the "Norway Current." A new No. 10 Worthington pump has been put in. An engine and boiler house, 260 ft. north of the shaft, is soon to be erected. Three 65-HP. boilers are now being put into place.

Mastodon Iron Company.—The stock dock is loaded to its full capacity, 22,000, and it has been decided to suspend operations until shipments commence. The work underground during the winter has been to open the ore remaining, and development has shown much more than was thought to be there. A meeting of the stockholders of the Mastodon Iron Company will be held in the office of the company, Chicago, on the tenth day of April, for the purpose of electing a board of directors and the transaction of such other business as may come before the meeting.

Mastodon Iron Company.—The sinking of the shaft for the 7th level has been discontinued for a time, now resting 37 ft. below the 6th level and 470 ft. below the surface, says the "Diamond Drill." There are 25,000 tons of ore now on the stock pile.

Morning Mining Company.—An ore body was struck in tunnel No. 4 on Feb. 13. This tunnel is in 925 ft., and will be continued until the vein is thoroughly prospected, when arrangements will be made to connect with level No. 3, which is 280 ft. above. Drifting will be prosecuted in a westerly direction. The ore at present is being taken from tunnel No. 3. But one class of concentrates is now made. This averages 20 oz. of silver and 55% lead. On account of stoppages of one kind or another, the mill has not been run continuously up to date.

MINNESOTA.

Iron—Vermilion Range.

Minnesota Iron Company.—The company has been experimenting with an ore crusher for some time, and has decided to add a regular plant to its works. The crusher experimented with was too light, and three others of 65 tons weight each have been ordered. These will have a capacity of 1,500 tons daily. They will run the ore as it comes from the mine through two sets of screens. It is calculated that it will cost 8 cts. per ton to crush the ore, but this will save sledging, and that the increased demand and price will more than make up for the additional expense. The mines are producing about 2,500 tons daily. The property is now wrought entirely on the back-stoping plan. The diamond drill is employed in putting many holes in the back. The ore is so hard that the wearing of the power drills was so rapid that the holes had to be "burned," causing much delay and expense. The diamond drill cuts a clean hole of the same size for its entire length and immense charges of dynamite are used, and great burdens are moved. This gives many massive pieces, and their breaking by sledging has been laborious and costly.

MONTANA.

State Mining School.—The State Legislature has decided to locate the new mining school at Butte.

Deer Lodge County.

Granite Mining Company.—Mining is principally confined to the Ruby claim, from the 900 to the 1,500-ft. level, inclusive, and the 1,700-ft. level, all of which are not yet fully opened up, says the Granite Mountain "Star." The working force is about 335. The Rumsey mill crushes on an average 210 tons of ore daily. The tunnel at Rumsey is now in 2,800 ft.

Silver Bow County.

Boston & Montana Consolidated Copper and Silver Mining Company.—The shaft has attained a depth of 1,000 ft., and most of the work of development is confined to the bottom level. It is said that there is ore enough in sight to last for a number of years.

Butte & Boston Mining Company.—The works and mines are all in operation. The Silver Bow mill is in operation, and is treating ores purchased from leasers, and is also working a quantity of the oxidized ore from shaft No. 2. Silver Bow shafts Nos. 1 and 2 are chief sources of supply to the company's smelter. At shaft No. 2, which contains a quantity of oxidized ore, work is steadily progressing. While silver was quoted at a higher figure, much of this oxidized ore was worked, but since its decline it is only where large quantities of this ore can be easily mined that the work of mining and treating it will pay, says the Butte "Inter-Mountain."

Butte Reduction Works.—This company has not employed its customary force of men during the past winter. The concentrator attached to the works has been idle the greater portion of the time. The chief source of supply for these works are the Colusa-Parrot, Original, Travonia and some other small properties. All the ore at the works is now desulphurized in kilns, and the old roast heaps have been entirely removed.

Parrot Smelter.—This smelter obtains its supply of ore from the Parrot and the Moscow mines, and from D. G. Bricker's lease on the Virginius. It is rumored that the Parrot company expresses dissatisfaction at the recent smoke agitation, and that some of the stockholders had stated that if the company was required to build a stack suggested by the citizens of Butte the smelter would be moved elsewhere, says the Butte "Inter-Mountain." The north lead of the Parrot mine becomes more valuable as depth is attained.

NEVADA.

Esmeralda County.

(From our Special Correspondent.)

Mt. Diablo Mining Company, Candelaria.—A shipment of bullion, containing 4,832 fine oz. of silver, has been received at the San Francisco office.

Eureka County.

(From our Special Correspondent.)

Atlantic & Pacific Tunnel Company, Eureka.—This company owns a group of claims lying contiguous to the Diamond mine, on Prospect Mountain, and from the surface indications they appear to be quite as valuable. A tunnel is being driven for their development.

Diamond Mine, Eureka.—This property is reported to be looking better than ever, and the contracting teamster has received orders to prepare for hauling about twice the usual quantity of ore.

Eureka & Palisade Railroad Company, Eureka.—The ore shipments during the month of February were very light. Not a pound of ore was received at the depot from White Pine County. The mines of Eureka district furnished the following lots of ore transportation to Salt Lake City: The Diamond mine, 609 tons; Eureka Consolidated mine, 246 tons; Jackson mine, 91 tons; Bullwhacker mine, 30 tons, and the Richmond mine 15 tons.

Storey County—Comstock Lode.

Belcher Mining Company.—The latest official weekly letter says: West cross-cut No. 2, 100 ft. north of the north winze on the 350 level, is out 63 ft. The face shows porphyry and a streak of fair ore about 8 ins. wide. We have on hand at the mine about 150 tons of fair ore, and are daily hoisting about 20 tons of ore from the stopes immediately above and below the 300-ft. level.

Crown Point Mining Company.—The latest official weekly letter says: The west cross-cut from the southwest drift, 150 ft. south of the shaft on the 400-ft. level, is now out 331 ft. The face is in vein material composed of clay, porphyry and quartz, yielding low assays. We are opening north and south from the raise above the 160-ft. level, west stope, on the 10th and 11th floors, following a streak of ore ranging from 6 to 15 ins. wide.

Savage Mining Company.—The latest official weekly letter says: We hoisted 328 cars of ore from the 1,100, 1,400 and 1,450 levels; shipped to the Nevada mill 420 tons and milled 420 tons. Average car sample assay, $19.38; average battery assay, $18.63; bullion yield for the week, $5,476.80; shipped to the United States mint at Carson, February 23d, 365 lbs. of crude bullion. On the 1,100 level the north prospecting drift from the 16th floor is now advanced 37 ft. in low-grade quarz and porphyry.

(From our Special Correspondent.)

The following is the weekly tabulated statement of ore hoisted from Comstock mines and milled, with the car and battery assays, bullion shipments, etc.:

Mines.	H'st'd.	Car assay.	Mil'd.	Bat'ry assay.	Bullion for week.	Bullion Shipped.
	Tons.		Tons.			
Belcher ..	140	.....	.....	.....	.....	.....
C. C. & Va.	490	[1]37.50	860	33 80	.....	[2]827,445
Potosi.....	458	33 55	478	33 06	.....	[3]361 lbs.
Savage....	[4]328	19 32	420	18'63	5,476.80	[5]265 lbs.

[1] Railroad car. [2] First shipment on Feb'y account. [3 5] Crude bullion. [4] Cars.

Consolidated California & Virginia Mining Company.—The Morgan mill will stop crushing ore after the clean-up, for about 10 days, to allow ore to accumulate in the ore bins. All surplus ore has been shipped to the mills, and as more can be crushed than is being hoisted at present, a temporary stoppage will be made. About 75 tons per day is the amount being taken out.

Hale & Norcross Mining Company.—W. J. Dwegee, real estate dealer, of Oakland, Cal., Charity Hayward, wife of Alonzo Hayward, and Misses Alice and Ella Hobart, daughters of the late W. S. Hobart, have been accepted as bondsmen in the Hale & Norcross case by Chief Justice Beatty, of the Supreme Court. They qualified in $4,100,000.

West Consolidated Virginia Gold and Silver Mining Company.—Oscar C. Steele, the plaintiff in the suit against M. W. Fox et al., for an accounting in the matter of the above company, seems to be getting a little tired of the position in which he has placed himself. The trial of the case, which is now progressing before Judge Slack, in Department 2 of the Superior Court of California, has developed some interesting features, not the least important of which has been the withdrawal of most of the charges offered by the plaintiff. Mr. Steele, under cross-examination, was compelled to confess that he came to San Francisco from Nevada at the request of Bob Keating, who at that time, June, 1889, was superintendent of the Hale & Norcross mine. He met Keating and the notorious H. M. Levy at the office of the Savage company, when they paid him $160 for his expenses. The plaintiff told how Levy was to furnish him with money to obtain control of the West Consolidated Virginia mine. The negotiations for the time being fell through, because Levy wanted witness to make over all his stock to him, and this witness could not do, however much he might so desire, by reason of the contract binding him to Fox & Brown. For that reason Levy was not able to obtain control of the mine; but witness stated, at the commencement of the present suit, that he offered to bear the expenses of litigation if witness would turn over to him all of his stock. The witness, upon being cross-examined as to the "bonanza" which he had testified to directly, stated that most of the ore encountered while sinking the shaft was low grade. In the upraise, between the 175 and 350-ft. levels, he had found the ledge about 12 ft. wide, carrying ore that assayed from $25 to $30 per ton. He drifted about 60 ft. along the ledge, all of which was in good milling ore. M. J. Mertens, a son-in-law of Steele, stated that M. W. Fox told him that when J. W. Mackay was in San Francisco, two months before, he had informed Mr. Mackay that the Consolidated California & Virginia Mining Company had extracted a large amount of ore, and had taken a large amount of money out of the West Consolidated Virginia ground, and he asked for a settlement. Mr. Mackay replied that the matter would be investigated, and that he would give W. T. Baggett (Fox's representative) an opportunity to look into the matter; that if Baggett would go to Virginia City he could, in conjunction with one of Mr. Mackay's men, survey the mine and ascertain the facts. Baggett went to Virginia City, but upon making application for permission to examine the mine, he was informed that an order had been sent by Mr. Flood, forbidding him admission. P. Armioux, a director of the Justice Mining Company, testified that Mr. Fox had frequently talked with him about the West Consolidated Virginia mine, and stated that it had a body of rich ore. He thought that if the stock had been listed on the Exchange it would have gone to a high figure. On cross-examination, however, witness confessed that ore now being taken from the Justice mine averaged $30 per ton, and yet the stock is selling for 25 cts. He admitted that if mining stock was properly manipulated, it made no difference what was in the mine.

NEW MEXICO.

Grant County.

Mountain Key.—The lessees operating this mine are taking out good ore from the upper levels. There is considerable ground in the 200, 300 and 400 ft. levels which has not been worked. Below the 400-ft. level the mine is full of water. Nothing will be done in the mine below the 400-ft. level for the present, as the expense of pumping the water out would be considerable.

Pyramid Silver Mining and Milling Company—This company has over 50 men at work at Pyramid, and this number will be increased during the spring. The mill was repaired recently, and concentrates are being shipped regularly.

Lincoln County.

Old Abe Mining Company.—This company has been making cross-cuts on the 5th, 6th, 7th, 8th, 9th and 10th levels, 40 ft. north of the working shaft. Large bodies of ore have been found on all the levels, says the White Oaks "Eagle." On the 7th level the cross-cut passed through 24 ft. of high-grade ore, and about the same distance through a lower grade, worth from $7 to $10 per ton. The high-grade ore will run from $25 to $30 per ton, and seems to be a distinct lead, running more to the northwest and southeast than the lead heretofore worked. This same ore has been reached on the 8th and 9th levels. The same ore is being worked in the 5th and 6th levels, but it is more broken up, and has more or less waste in it. The lead has been opened 100 ft. north on the 8th level, and shows the same class of ore.

Vera Cruz Gold Mining Company. This company has been incorporated with a capital stock of $200,000. The incorporators are M. D. Gaylord, R. Y. Anderson, W. F. Brann, G. P. Warner and O. W. Kellogg. (See last week's Engineering and Mining Journal.)

Sierra County.

(From our Special Correspondent.)

Animas Peak Mining District.—Animas Peak District, situated six miles north of the town of Hillsborough, the county seat of Sierra County, New Mexico, bids fair to become a good gold mining camp in the near future. Among the most prominent mines is the Happy Jack, a gold lead situated about three-quarters of a mile west of Animas Peak. The lead lies in syenite and porphyry formations, and is from 6 to 8 ft. wide. The greater portion of the ore is of a high grade, running from $56 to $1,200 per ton in gold. The gangue of the vein is decomposed quartz, porphyry and talc, with some sulphide ore and thin sheets of native copper-carrying gold. The matrix is much decomposed. A good portion of the ore is free milling. A mill run resulted in a saving of $56 a ton on the plates, and concentrates assayed $120 per ton. A double compartment shaft is sunk 125 ft. deep, and it is in good ore all the way down. At the bottom of the shaft the vein will average from 6 to 9 ft. in width between walls. There are also two drifts, one running north 30 ft., the other running south 50 ft. At the bottom of the shaft the lead is slightly broken and may be faulted; at the present it appears to be permanent.

The Milwaukee company have 10 patented claims near Animas Peak and in the immediate vicinity of the Happy Jack mine. These veins will average from 6 in. to 4 ft. as far as they have been prospected. I understand that it is the intention of the company to push development on these mines this spring and summer. The ore runs well in gold, copper and silver. On the southeast of Animas Peak is another group of mines, consisting of the Lincoln, May Belle, Vanderbilt, Chicago and Golden Star. Mr. Woolsey, the owner, has done considerable work on these claims. The veins are from 8 in. to 8 ft. wide, with well defined walls, and run well in gold, with some copper. The character of the ore is quartz with oxidized iron and talc. The Chicago is an especial good prospect.

Mr. John Brooks has several good prospects adjoining Mr. Woolsey's claims. Among them are the Chance and Christmas mines. The vein on the Chance at the depth of 70 ft. is over a foot wide, and carries copper, silver and gold, the gold predominating. A portion of the mine was recently sold. The vein is well defined, and lies in a felsite formation. A good lot of ore on the dump.

The Centipede, located north of Black's Peak, is a good prospect. A tunnel has been run some 70 ft. deep, cutting the lead.

The Lochiel group of mines, near Black's Peak, is the property of Mr. J. H. Crane, and is considered a good prospect. The group consists of the Black's Peak, Polar Star and Lochiel. A good lot of work has been done on this group. A pipe line has been surveyed from the Animas Creek, with the intention of washing the placer ground just east of Animas Peak. The pipe line will be about 18 miles long and of 20-in. iron piping. It is reported that the company has raised sufficient money for its undertaking.

NEW YORK.

Talc Combination.—A special to the Utica "Herald" from Gouverneur states that New York capitalists have effected a consolidation of all the talc companies of the State, with a capital of $2,000,000.

NORTH CAROLINA.

Statesville Development Company.—The mineral lands of this company, near Statesville, N. C., have been inspected with a view to working the deposits of corundum.

OHIO.

Oil Wells.—For the Buckeye District the February report shows 85 new wells completed, having a total yield of 4,809 barrels; a decrease of 15% from January in the number of wells, and of 14% in production. In the Southeastern District 15 wells were completed, with a total production of 168 barrels a day.

OREGON.

Jackson County.

(From our Special Correspondent.)

Ashland Mining Company, Asland.—A clean-up has been made at the five-stamp mill after a 22 days' run, resulting in nearly $6,000 being obtained. Since November, 1892, 900 tons of ore has been crushed, yielding over $20,000.

PENNSYLVANIA.

Oil Wells.—Stowell's report for February notes the completion of 84 wells, with a total production of 6,814 barrels daily. As compared with January, there was a decrease of 41 in the number of wells, but an increase of 1,113 barrels in production, the new wells averaging 110 barrels, against 66 in January. At the close of the month there were 204 new wells under the drill.

Coal.

In the production of 5,854,638 tons of coal in the First inspection district last year—an increase over the year preceding of 829,535 tons—14,121 miners and mine laborers were employed; there were 55 fatal accidents and 115 non-fatal accidents.

The Burkhart-Moser Company has been chartered under the laws of New Jersey for the purpose of pushing the long-disputed claim to the estate in Schuylkill County between the Moser heirs and the Lehigh Valley Coal and Navigation Company, which involves some $12,000,000. The capital stock is $80,000, divided into 4,000 shares, at $20 per share. The stock is not all held by heirs, some of it being in the hands of politicians.

SOUTH DAKOTA.

Lawrence County.

Deadwood.—"Among the new plants to be erected in Deadwood Gulch as soon as the weather opens are a 100-ton chlorination plant by the Horseshoe Mining Company, a 200-ton chlorination plant by the Welcome Mining Company, a 100-ton cyanide plant by the Denver Gold Extracting Company, a 100-ton addition to the Golden Reward Chlorination Works, and a 100-ton chlorination plant by the Consolidated Mining and Milling Company," says the Deadwood correspondent of the N. Y. "Sun." Thomas White, agent of a Canadian syndicate which owns 400 acres of mining ground on the "Blanket" formation embraced in the horseshoe group, has struck a body of ore at a depth of 302 ft. The ore is a blue non-oxidized ore, averaging $23 per ton gold with two ounces of silver. The Wells-Fargo property, recently purchased for $65,000, looks better. The property is shipping 35 tons daily to the Golden Reward plant. The new 40-stamp Hawkeye mill was placed in operation on February 25th.

Deadwood and Delaware Smelter.—The new dust chamber is nearing completion, and it is expected that the matting furnaces will be blown in in about two weeks.

Gold Mountain.—The owners have ceased shipping ore, but increased prospecting is going on.

Hardin-Baker Group.—A diamond prospecting drill has been purchased for $2,000. It will be used from the bottom of the shaft which is now 100 ft. deep.

Homestake Mining Company.—It is announced that in the future all work done on the lower levels will be done by contract.

Kansas City.—The new tunnel is about 100 ft. west and 25 ft. lower than that first run in, which reached a length of 175 ft. without showing ore.

Rudolph.—The tunnel on this lode, located between Terry Peak and the Spearfish Creek, is in about 150 ft., cross-cutting a vein 3 ft. thick. Assays from this ore give $17 gold.

TENNESSEE.

Polk County.

Burra-Burra Mining Company.—This company has completed the 600-ft. level in the mine at Ducktown, and is now running drifts preparatory to taking out copper ore.

Ducktown Sulphur, Copper and Iron Company.—This company's smelting plant at Ducktown is now nearly completed, and will soon be ready to begin operations.

London Coal and Iron Company.—This company is now shipping iron ore from the Isabella mine, near Ducktown, to furnaces at Pulaski and Roanoke, Va. The Chattanooga "Tradesman" says the ore has met with favor, and orders for it are increasing.

Pittsburg & Tennessee Copper Company.—This company has a lease of the old Tennessee mine, at Ducktown, and is at work developing the mine and extending the old workings.

TEXAS.

Llano.—A tract of 6,600 acres has been sold to Eastern parties, who are arranging to put down several shafts.

Olive Iron Mines.—There are now 75 men at work on these mines near Bessemer, Tex. The shaft has reached ore at a depth of 50 ft.

San Thomas Coal Mine.—This mine, now worked by the Minerva Colliery Company, of Laredo, is shipping 300 tons weekly.

UTAH.

A. Hanauer, Jr., of Salt Lake City, has compiled a statement of the gold and silver output of Utah for 1892, for the use of Director of the Mint Leech. He places the silver output of the territory at something like 1,000,000 oz. less than the report of Wells, Fargo & Co. The total gold output for 1891 was $31,644; for 1892, $31,926; showing an increase of $282. The silver output for 1891 was 8,750,352 oz.; for 1892, 7,762,257; showing a decrease of 988,095 oz.

Salt Lake County.

Salt Lake City.—According to the "Salt Lake Herald," there is a hitch in the arrangements for the copper smelter which is to be erected by Mr. Green, of Denver. The citizens and Council of the city have agreed to give Mr. Green a bonus of $100,000 in cash and a free site, but the subscribers to the fund expect Mr. Green to give a bond that he will erect a smelter of a certain size and cost. This he seems disinclined to do, and it is possible that the scheme will yet fall through.

Summit County.

Chalk Creek Coal Mining Company.—Mining Inspector Forrester has reported this company's mine at Coalville as needing many improvements in the ventilation, the hoisting machinery and the means of communication with the engineer. The inspector states that the coal is reached by a shaft 300 ft. in depth, and the coal stratum varies from 6 to 9 ft. in thickness, and is worked on what is known as the room and pillar system. During the year the company has shipped over 1,000 tons of coal into Salt Lake. Thirty-two workmen are employed at the mine, which is in very bad condition, there being practically no fresh air circulated through it.

Cumberland.—A strike of fairly good ore is reported in the Cumberland group, says the Park City "Record." The ore body averages nearly 2 ft. in width, and the rock runs from 26 to 78 oz. in silver and 12% to 15% lead. This block of ground lies between the Silver King and the Crescent, and shows low grade ore almost from the grass roots. Since the ground has been placed in the hands of a stock company a large amount of development work has been done.

Daly West Mining Company.—Connection was made with the Daly on the Daly 800 level, February 17th, which will admit of the drainage of the mine, saving the expense of pumping. Prospecting will commence in the lower levels at once, and it will not be long before it will be known just what the mine contains. Arrangement will soon be made for shipping what smelting ore is extracted in the work of development.

Ontario Mining Company.—The finding of a new body of rich ore has now been tacitly admitted, says the "Record." Some ground on the 600 ft. level gave way on February 11th, and a miner working below was killed. The cave extended 50 ft. in length and the width of a large stope, and down nearly 100 ft. As the mass of earth rushed down it carried all the timbers and waste in its way. The cause of the cave has not been ascertained, but it is supposed that the timbers were unable to support the ground above. The vein is very wide at that point, and had been stoped out in streaks.

Greeley Mining Company.—The annual meeting was held at Lake City, March 3d, and the following board of directors was elected: Edwin Rushton, W. A. Thompson, A. G. Giacque, Charles Ellis, C. B. Weeks, H. H. Evans and S. E. Vance. The proposition to make the stock of the company assessable was brought up and carried. This move was necessary, as the debts of the company demanded liquidation. There is a clause in the amendment which states that during no one year shall the stock be assessed more than 2 cts. per share, and no assessment shall be levied greater than 1 ct. per share, says the Salt Lake "Herald."

Tooele County.

Bullion Mining Company.—In regard to the strike made at this mine, the "Tooele Times" says, the drifts are now 25 ft. in the ore, and the face shows 3 ft. of galena, with 2 ft. of carbonate. Five tons have been shipped.

WASHINGTON.

Okanogan County.

Messrs. Mitchell & Gaines, of Chicago, have developed a 6-ft. vein by a shaft 90 ft. deep. The ore averages $190 per ton. This mine is about three miles east of Golden; 30 stamps are now running, and 20 will be placed upon the Wehl property and 20 on Captain Hall's mine.

Ivanhoe.—Work has been commenced on this claim on Palmer Mountain. The ore is said to average $300 in silver and $20 in gold per ton. Wood and water are at hand.

Try One.—The mill has just started operation. The mine is situated about 1½ miles from Golden, and at the foot of Palmer Mountain. The vein varies from 12 to 90 ft., it is claimed, in width, and the ore milled runs $6.

Pennington County.

Mark Twain.—This mine was shut down February 28th, it is believed, on account of the shutting down of the Welcome.

WYOMING.

Pioneer Hydraulic Mining Company.—This company was organized at Laramie, March 1st, to work 80 placer claims of 160 acres each in the Medicine Bow Range. The capital stock is $500,000. The following officers were elected: Thomas B. Everett, of California, president; Thomas H. Davis, vice-president; Geo. W. Fox, treasurer; R. E. Fitch, secretary; C. E. Carpenter, attorney; W. O. Owen, surveyor and engineer; August Trabing, director.

FOREIGN MINING NEWS.

AUSTRALIA.

During the past year the Charters Towers companies have paid £343,700 in dividends, as against £272,350 in 1891, while the excess of dividends over calls last year amounted to £231,000, says the London "Financial News." This result places the Charters Towers district at the head of the Australian goldfields.

The Broken Hill district shows the following results:

Name of Company.	Ore treated	Lead produced.	C'per produc'd	Silver contents.	Dividends declared.
	Tons.	Tons.	Tons.	Oz.	£
Proprietary	200 332	36,330	275	8,280,361	672,000
Block 10	14,776	127	20	2,037,284	237,500
Broken Hill Cons.	...	....	....	17,090	....
Junction North	87	....	....	2,030	....
British	23,205	4,015	20	2,214,262	....
Block 14	46,168	11,343	25	1,472,563	52,500
Central	26,102	2,091	79	813,184	7,500
South	16,873	2,447	129	445,000	....
Junction	2,330	280	....	54,122	....
Totals	389,873	56,633	548	13,333,809	969,500

At the Gympie gold field 85,000 tons of ore yielded 81,000 oz. The dividends for the year amounted to £116,700, and the calls to £61,000. The output of gold showed an increase of 22,000 oz. on the previous year, and the dividends an increase of £63,000, while the calls showed a decrease of £14,000.

The Bendigo district's results are as follows:

Year.	Gold, oz.	Calls.	Dividends.
1890	155,091	£111,142	£149 381
1891	153,396	114,870	148,937
1892	203,670	132,118	268,263

The dividends for the first half of 1892 were £93,470 6s. 6d., and for the second half £174,793 13s. 4½d. The New Chum United heads the list with £39,825 in dividends, the New Red, White and Blue is next with £31,500, and the Princess Dagmar is close up with £30,278 6s. 6d. The monthly output has increased from 12,200 oz. in January to 24,000 oz. in December, but November only yielded 16,858 oz.

BOLIVIA.

Huanchaca Mining Company.—During 1892 this company produced 204,000 kilos of fine silver, of which 65,000 kilos were fine bars produced at the Huanchaca smelting works and 139,000 kilos were exported in ore. The production in 1891 amounted to 182,225 kilos. The "Bulletin des Mines" gives the following details of the mines and works in advance of the regular annual report: "The shafts Ramirez, Leiton, Gladys and Pero are down to the 336 metre level. At this depth the vein is about 2 metres wide and the ore runs from 320 to 770 oz. per ton." The Playa Blanca Reduction Works have been completed and ore is now being sent from Pulacayo. The 80,000 shares which were authorized to be sold in Europe have been for the most part taken in France, and on the 320,000 new shares a dividend of 30 francs per share has been paid.

BRAZIL.

Ouro Preto Mining Company, Limited.—During 1892 gold was produced to the value of £44,894, as compared with £58,127 in 1891. The cost of production has been lowered considerably.

BRITISH COLUMBIA.

Many miners have neglected to take out a miner's license before investing, says the Nelson (B. C.) "Miner," and this is absolutely fatal to their title. No court of law can protect them, they cannot sue to eject the jumper, and in defending a case in a suit of ejectment they would be nonsuited at once. Ambiguous on many points, the law is perfectly clear on this: In order to acquire the legal status necessary to hold mining claims in British Columbia a man must invest $5 in a license.

Freddie Lee.—A strike is reported in this mine. According to the Spokane "Review" it was made in the last workings on the lowest level and is about 5 ft. wide.

Slocan Boy.—Arrangements are being made to put in a hoisting apparatus and to increase the force.

Solo.—The owners, after running a level about 90 ft. on the vein, commenced caosscutting, and after running 25 ft. encountered a fine body of ore.

(From our Special Correspondent.)

Silver King.—Telegraphic advices from London report the consummation of the sale of this group of mines in Kootenai to a Scotch syndicate for $1,800,000.

BURMAH.

A company has been formed to develop very promising coal deposits in the Shwebo district, in Upper Burmah. The coal will find a good market when the new Burmese railway is opened.

The oil wells of Yenangyoung, in Burmah, which have yielded small quantities of petroleum for many years, are to be developed and worked on a large scale with the best modern appliances, according to "Indian Engineering." The wells are now owned by Hannay & Co., but are to be transferred to a stock company with capital enough to work them properly.

Burmah Ruby Mines, Limited.—The last three months' washings to end of January have yielded a total of £2,780. The rumor that a satisfactory arrangement has been concluded for the rent of the mines is declared incorrect.

CANADA.

The coal exported from Canada during the fiscal year ending June 30th, 1892, amounted to 945,125 tons, valued at $3,195,467, divided as follows: To Great Britain 22,920 tons, value $53,101; to British Guiana 2,715 tons, value $7,545; to British West Indies 7,081 tons, value $18,511; to British Possessions Pacific Ocean 1,404 tons, value $5,616; to Australia 1,102 tons, value $4,408; to Hong Kong 9,915 tons, value $37,170; to Newfoundland 99,972 tons, value $202,607; to Belgium 400 tons, value $800; to China 1,149 tons, value $3,834; to Germany 150 tons, value $450; to Holland 700 tons, value $1,445; to Japan 1,226 tons, value $4,571; to Russia 1,181 tons, value $1,724; to St. Pierre 14,035 tons, value $30,413; to Sandwich Islands 4,722 tons, value $16,888; to United States 772,441 tons, value $2,790,693; to South West Indies 4,712 tons, value $12,961.

General Phosphate Corporation, Limited.—The annual meeting of this company was held in London, January 26th. The directors stated that the reasons for the absence of profits were the low selling price of phosphate and the difficulties in the way of the development and management of Canadian properties. They said that when the company commenced business, 80% phosphate was worth $25 per ton in London, whereas the same phosphate is now selling for $15.

Ontario.

(From our Special Correspondent.)

Canadian Copper Company.—The suits of S. J. Ritchie against this company and the Anglo-American Iron Company for the dissolution of these corporations were dismissed by Judge Hutchins in the Common Pleas Court here for want of prosecution. The attorney and officers of the two companies were present ready for trial, but neither Mr. Ritchie nor his attorney was present. The latter was found in another part of the Court House, and when a messenger from the judge informed him that the cases must be tried, he (the attorney) ordered them to be dismissed.

Quebec.

Templeton Phosphate Mines.—Lee Brothers, of Montreal, have uncovered one of the largest deposits of high grade phosphate of lime ever discovered in Canada, on lots 15 and 16, range 10, in the township of Templeton, Ottawa County. They are about putting in a steam plant with a view to a large output of 80% ore during the current year.

ECUADOR.

(From our Special Correspondent.)

Playa de Oro Mining Company.—The schooner "Nora Hawkins" sailed this week with a cargo of mining machinery, supplies, etc., and a passenger list of mechanics, miners, pipemen and several clerks. The party is bound for Esmeralda in the northern part of the republic, where the company intend developing a large gold-mining interest on the banks of the Santiago River.

FRENCH GUIANA.

Placer Enfin.—During the year 1892 this company produced about 200 kilos of gold, being 40 more than in 1891. Since its formation in 1881, this company has paid dividends amounting to 69·8 francs per share of 500 francs and it now has a reserve fund of 200,000 francs.

INDIA.

In 1892 the Mysore mine produced, according to "Indian Engineering," 64,385 oz. of gold, against 66,501 oz. in 1891.

The Indian Government has decided to stop the explorations of the oil fields on the frontier of Beloochistan. These have been going on for nearly two years at a large expense.

At the Balaghat-Mysore, the chief mine in the Kolar gold field, 1,274 tons of rock were crushed in December, yielding 786 oz. of gold. The total yield of this mine was 6,917 oz. in 1892, against 1,968 oz. in 1891 and 1,580 oz. in 1890.

It is stated that the government has decided to make a careful examination of the mineral resources of the Central Provinces. The first surveys to be made will be of the Chutia-Nagpur gold fields, and these will be followed by a survey of the iron deposits near Bawakur.

Concerning the legality of women working in the mines of British India, Mr. G. W. Russel lately replied to a question put in the House of Commons by Sir J. Gorst, as follows: The system is still lawful; but the Secretary of State has intimated to the Government of India that it was most desirable that the employment of women and girls in this manner should be prohibited, in accordance with the decision of the Berlin Conference.

JAVA.

Tin Discoveries.—According to United States Consul Wildman, a Dutch company has erected works and a smelter at Singkep to test the tin ores discovered at that place. He also reports the discovery of tin at Jahore, and the Sultan will send samples to the World's Fair.

LOWER CALIFORNIA.

(From our Special Correspondent.)

The Florida Mine.—A two-third interest in this property has been sold by Señor Fidel Villavicencio to Messrs. Lewis & Sons, a well known firm of ore buyers in Liverpool, Eng. The price obtained was $20,000. The purchasers are also owners of the San Andreas ranch, and the fiber concession on the coast.

MEXICO.

Anglo-American Mining Company, Limited.—At the annual meeting, recently held in London, the chairman, Mr. George Hopkins, said that: "The condition of the mine and the prospects of the company have very much improved, as compared with last year. The new manager, Mr. Hughes, is now working on the Coche vein, which is a vein quite distinct from that which had been previously worked. The streak of high-grade ore in the Zapien winze is something over 1 ft. in thickness, with a tendency to widen out, and the ore assays 107 oz. to the ton. The ore on the West drift from San Marcos shows 47 oz to the ton and is about 3 ft. thick. The ore in the deep workings of the old mine has been exhausted. There is nothing special to report about the various drifts, etc., now being made. Silver to the value of $360,945 Mexican has been obtained during the year, which realized only £49,690. The year previous the Mexican dollar was worth 3s. 2d., while during the year being dealt with it was only worth 2s. 10d. It requires an output of something like 30,000 oz. a month to pay the expenses of the mine."

Coahuila.

The Explorador mines, in the Sierra Mojada district, have been leased by Señor Francisco Armendaiz, of Monterey, who is putting in a hoisting machine.

Durango:

(From our Special Correspondent.)

Work on a new smelter has begun at Pedrixna, on the line of the Mexican International Railroad. The promoters are C. P. Huntington and the Omaha & Grant Smelting Co., of Omaha and Denver.

Guanajuato.

Contracts have been closed for a plant of Chilian mills and amalgamating barrels for the Balañitas mine, in La Luz district. It will be the largest plant of the kind in Mexico. The motive power will be supplied by a 200-h. p. Corliss engine.

Hidalgo.

According to the "Obrero, of Pachuca, very rich ore is now being taken from the San Patricio de la Palmo mine. At La Reina it has been necessary to suspend mining until the hoist is repaired. El Cristo is now under the direction of Mr. William Jenkins.

San Luis Potosi.

La Union Potosina.—This mine has, says "El Minero Mexicano," sadly disappointed its stockholders, who thought that, as soon as the new shaft reached the old workings, there would be sufficient ventilation. It has resulted, however, in less air than before and such a large quantity of water has entered that it cannot be removed in several years.

The Junta has suspended all work.

NEW SOUTH WALES.

The committee recently appointed by the Minister of Mines to investigate the question of the establishment of a School of Mines in the colony has reported that "in view of the provision already made in the university for giving a complete course of instruction in mining and metallurgy, and also the good work being done in the technical branch of the Department of Public Instruction, in the same direction, it is not desirable that a separate school of mines should be established in connection with the Department of Mines. It is, however, recognized that under the metallurgist recently appointed by the government the Department of Mines might be able to afford to the mining students, both of the University and the Public Instruction Department, most valuable practical instruction in metallurgical processes." The committee also advocates the granting of certificates as mine managers to those who, not having time to take the full prescribed course in the University shall nevertheless pass an examination in geology, mineralogy, etc., and produce proof of having been two years employed in a mine.

NOVA SCOTIA.

A Montreal syndicate has acquired control of the Canada Coal and Railway Company, limited. The full paid capital stock is $1,500,000; first mortgage 6 per cent. gold bonds, $750,000. The company owns upward of 14 sq. m. of coal-bearing territory in Cumberland County, extending from Maccan, on the Intercolonial railway, to Joggins, on the shore of the Bay of Fundy, where extensive improvements are now being made to provide for large shipments of coal. The company has acquired all the property of the Joggins mines, the McNaughton area, the Patrick mine, the Milner area, the Leeckie area and the Nova Scotia Railway and Coal Company. The members of the syndicate include Messrs. A. F. Gault, Samuel Finley, R. L. Gault, F. Wolferstan Thomas, of the Molsons bank; S. H. Ewing, W. M. Ramsay, Walter Watson, of the Bank of Montreal, and Edwin Hanson. Mr. Samuel Finley is president of the new corporation, and Mr. S. H. Ewing is treasurer. All the members of the syndicate are residents of Montreal, with the exception of Mr. E. W. Wilson of E. Wilson & Co., of Montreal and New York, who successfully conducted the negotiations for the acquisition and consolidation of the various properties.

Coal Mining in 1892.

Caledonia Coal Company.—This company shows a heavy falling off in its shipments as compared with 1891, owing to the loss of the contract to supply a large amount of coal to the Canadian Pacific Railroad. The company has made a number of improvements, such as the purchase of an Ingersoll air compressor for working coal cutting machines and pumping.

Gardener Coal Company.—First started in 1891, the company has, during the past year, doubled its sales. This is the only Cape Breton colliery where an electric coal curting machine is used.

General Mining Association, Old Sydney Mine.—This colliery leads all the others in quantity shipped. Outside the ordinary work, the only noteworthy improvement effected last year was the lining of the main pumping shaft at the "Princess" pit with cast iron tubing to a depth of 330 ft, says the "Canadian Mining Review." The pit is 11 ft. in diameter, and it took 1,179 pieces of tubing, each cast to the curve of the shaft, and the weight of all was 378,000 lbs. The tubing was all cast at the company's own foundry. Three-hundred feet of this shaft had been tubed while the pit was being sunk to keep back a feeder of water, so that the shaft is now lined with cast iron to a depth of 630 ft. Its total depth is 709 ft.

Gowrie Mine, Cow Bay.—Messrs. Archibald & Co. have shipped 138,500 tons. The Gowrie has been making steady progress for some years past and is now second to none as a steam coal. The deep has been extended 300 yards, and a new level has been driven east off the deep. A new pump was put in the lower deep. The greater part of the shipping wharf was re-trestled, and the greater part of the main pier new fendered, the planking renewed, and new drop and shoot frames erected. Satisfactory prospecting was done on the company's third lease with the diamond drill, and a six-foot seam traced all along the outcrop for half a mile.

Little Glace Bay Coal Company.—The larger portion of the output was bought by the International Company and sold in the St. Lawrence market. During the year a new hoisting engine and pump have been put in. The company has gone into the coal barge business, and now has three whalebacks carrying coal to Halifax, Newfoundland and elsewhere.

Old Bridgeport Colliery.—This colliery has, for some years past, been leased from the General Mining Association by Mr. Henry Mitchell, who sells the output to the International Coal Company, but on December 31st, it was bought by that company, and it is expected that operations will now be conducted on an enlarged scale.

Sydney and Louisburg Coal and Railway Company.—This company shows up well with a shipment of 136,000 tons from the "Reserve" and "Emery" pits. The Ingersoll air compressor stationed at the Emery pit continues to give satisfaction in working the coal cutting machines in the mine, and also in pumping. The management has recently discovered a large body of coal underlying the "Reserve" area.

The International Coal Company.—This company, foreseeing a falling off in the demand for coal, did very little banking in the early days of 1892, but its work after navigation opened was fairly brisk. The company erected last year a slack bin adjoining the heapstead, into which the slack is conveyed from the screens for storage. The bin has a capacity of 750 tons, and the slack can be rapidly loaded into cars when occasion requires. It has been proved to work admirably and to be a great saving as regards time and expense. The heapstead has been raised and rearranged so that the coal as it comes from the shaft can be handled with more ease and expedition than before.

The company's railway also carries the coal from the old Bridgeport and Gardener collieries, beside which a regular passenger and freight service is maintained between Sydney and Bridgeport. During the last two seasons the company has purchased the output of the Old Bridgeport colliery as well as 50,000 tons annually from the Little Glace Bay Company.

Victoria Mine.—A very material progress has been made at this colliery in the quantity of coal shipped. No work of note, outside the ordinary routine, has been done here. The company are putting in new boilers.

Cape Breton County.

(From our Special Correspondent.)

East Bay Coal Company.—The company is reported as about doing further development work on their hard-coal deposits at East Bay. The Burchell Bros., who recently sold their Gardener colliery to the Whitney syndicate for the sum of $110,000, are said to have purchased from Thos. E. Kenney, M.P., the New Campbelton mine at a cost of $40,000. This mine was worked on a small scale for a number of years, and has been closed for some time past.

Dominion Coal Company.—This company (the Whitney syndicate) has taken over the Gardener and Glace Bay mines, and expects shortly to take over the remaining options. Mr. Donkin, late Government Engineer for ths Cape Breton Railway, has charge of a survey, just started, to secure a line of railway from the coal fields to Louisburg Harbor, about 25 miles. It is expected that a very favorable line can be secured at a low cost. The various pits have begun to bank coal in readiness for the summer shipments.

Glace Bay Mining Company.—The company has received the first payment of $560,000 from the Whitney Coal Syndicate.

Victoria Mines.—At these mines the boiler battery, which was damaged by explosion at the close of last year, has been replaced. They will not be able to put in all their men for a few weeks until the water is pumped out. The Sydney mines recently beat their record by raising 1,501 tubs, 2,970 tons, of coal in an ordinary day's hoisting.

Pictou County.

Intercolonial Company.—At the annual meeting J. P. Cleghorn and H. A. Budden were elected president and vice-president, respectively. No mention is made of the financial results of the year's work, which amounted to $187,593 tons sold.

Queens County.

Richardson Mine.—This mine, at Stormont, has now got into running order, and the first crushing gave 180 oz. from 350 tons. The crushing pay streak is about 6 ft. wide.

SIBERIA.

Nerchinsk Iron Works.—It is stated that Russian engineers are making an examination of the iron deposits in the southern spurs of the Jablonnovoi Mountains, with a view to developing them on a large scale when the Siberian railroad reaches them. The present small forge at Nerchinsk will probably be the center of extensive works.

Oussouri Coal Mines.—Arrangements are being made to extend the workings of the coal mines in the Oussouri district north of Vladivostok. These mines will be the chief source of supply for the Siberian railroad.

SOUTH AFRICA.

The companies of the Witwatersrand paid £1,150,000 in dividends during 1892. Work on nearly 11,000 new claims was commenced in December.

The report of Mining Inspector G. Scheurmann, of the Transvaal Republic, South Africa, shows the following result for all the mining districts for the third quarter of 1892: Tons ore received, 592,085; tons milled, 547,501; gold saved, 342,653 oz. The mills at work report a total of 3,421 stamps running. The total number of workmen employed was 3,456 white men and 25,090 natives. The deepest shaft is at the Heidelburg-Roodepoort mine, and is now down 917 ft.

A report by Mr. Bain, surveyor for the Mining Department, on the gold-bearing alluvial deposits of Little Namaqualand is given by the Johannesberg "Star." There was much excitement over the gold discoveries there, but Mr. Bain does not think it justified by the facts. It appears that he has only been able to find gold prospects over an area of 450 yards long by about 30 yards wide. The gold occurs in the fissures of compact schistose beds, which strike northwest and southeast, and dip northeast at an angle of 80°. They are covered with 6 in. of soil, and it was only by noticing the gold in the spoor of an old wagon road that the deposit was discovered. Mr. Bain does not think that sufficient gold will be found there to justify the locality being proclaimed as a public gold digging. No quartz reefs carrying gold in notable quantities have yet been discovered, but further exploration may be more successful.

Cape Colony.

The export of gold from the Cape Colony during the month of January amounted in value to £404,000, as compared with £339,000 in the corresponding month of 1892.

SOUTH AMERICA.

Argentine Republic.

(From an Occasional Correspondent.)

In a review published lately in Buenos Ayres are found some very interesting remarks upon the nine mining provinces of Argentina. There are 2,000 concessions of all classes, besides 1,500 held from the National Government for minerals in the Federal territories.

Catamarca.—The principal copper mines are at Capillitas, in the northeast, where the *Restauradora* has been worked for 27 years. It has a depth of 1,000; large samples show 20 to 30 % copper. A sample from the Hoyada mines (little worked), in the northwest of the province, gave: Copper, 11%; silver, 183 oz. per ton; gold, 10 oz. per ton.

This province possesses the largest smelting works in the country, the establishment of Señor Lafone Quevedo, at Pilciao. The ore is conveyed from Capillitas by pack mules in two days. Wood is used for fuel. It takes 25 tons of firewood to reduce tons of ore, the wood costing 90 cents per ton. The copper bars usually contain 90% of copper, 200 to oz. silver, and 10 to 15 oz. gold.

The Romay iron mine, in this province, has a titanic ore yielding 48% of metallic iron. The company proposes to use charcoal in the blast furnaces, made from the woods on their grounds. A government guaranty of 5% per annum for 10 years on a capital of $1,000,000 has been granted this company.

Rioja.—The Mexicana mines, in La Famatina range, are the best copper mines in the republic. Some samples have given a yield of 44% copper and about 30% sulphur. The ore is raised from a depth of 330 ft. upon boys' backs. It is then transported by pack mules for three days' journey to the lower levels. The average obtained from a lot of 937 tons of ore was: Copper, 15%; silver, 67 oz. per ton; gold, 1¼ oz. per ton.

The silver mines at Rioja vary from 10,000 to 14,000 ft. above the sea level at Cerro Negro, Figre and Ca'dera.

Mendoza.—Samples of copper ore found yield 20 to 40% of the metal, besides 1 per 1,000 of silver. Samples from a new coal field near San Miguel have been analyzed and found to contain from 48 to 60% of carbon, with a calorific power of 5,405.

San Luis.—The Carolina mines are best known. There are two English companies with £26,000 and £10,000 respectively, of paid-up capital. Local statistics show that the gold mines yield 5 oz. of gold per ton of ore.

Salta.—This province is also noted for its copper mines. That of Chacabuco has been worked several years, samples showing 48% of copper and 1 per 1,000 of silver. San Antonio gave the following: Copper, 40%; silver, 0.57%.

Cordoba is the least important of any of the mining provinces. There are a few copper and galena mines worked on various occasions, but so badly managed that they do not pay for their working.

In the Neuquen territory, adjoining the Andes, there is said to exist an extensive coal field, and samples from it result as follows; Carbon, 50 to 54%; coke, 57 to 61%; calorific, 4,570 to 4,636%. This is supposed to be a continuation of the San Rafael (in province of Mendoza) coal field. Concessions have, moreover, been taken out for working mines of gold, silver, copper, lead, petroleum and nitrate in this territory.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, Deadwood, S. Dak.; St. Louis, Helena, Mont.; London and Paris, see page 240.]

NEW YORK, Friday Evening, March 10.

Decidedly, the most sanguine of all mortals are mining stock brokers. Hope never dies with them. For the past few years trading in mining stocks has been growing smaller and smaller in volume, but the brokers generally have always maintained that a "boom" would come some day which would cause all the lean years to be forgotten. The past week, in so far as actual business is concerned, is not at all unlike its predecessors, but more inquiries for mining stocks have been received, which, although they have not resulted in many sales, have yet caused a more hopeful feeling to prevail.

The Comstocks have been somewhat firmer in price. Reports from San Francisco would indicate that better business was doing there during the week than for some time past, but if this is so it has not been reflected to any appreciable extent in this market. Comstock Tunnel stock continued in very fair demand; during the week there were sales of 1,300 shares at 11@12c. Of Consolidated California & Virginia 400 shares were sold at $2.58 to $2.65. Other sales of Comstock stocks were as follows: 100 shares of Best & Belcher, at $1.65; 200 shares of Mexican at $1.80; 100 shares of Union Consolidated at $1; 200 shares of Hale & Norcross at $1.25; 200 shares of Ophir at $1.90 to $2; 200 shares of Sierra Nevada at $1 20 to $1.25; 100 shares of Yellow Jacket at 55c.

Of the California stocks there was a sale of 200 shares of Belmont at 22c. Quicksilver shows a sale of 100 shares of the preferred stock at $14, and one of 200 shares of the common stock at $3. Of Plymouth 200 shares were sold at 80c., and of Standard Consolidated 100 shares at $1.50.

Brunswick Consolidated this week was dealt in to the extent of 4,200 shares at 5c.@6c. The superintendent of this company, writing from Grass Valley under date of the 1st inst. says: "There has been very little change in the mine since my last letter, except that the ground in both drifts looks more favorable. The ledge in the 700 west is from 12 to 14 ins. wide and looks better than it did, but shows no gold. During the past week the east drift has been extended 7 ft. and the west drift 6 ft.

Of the Colorado stocks, Chrysolite shows sales of 300 shares at 22c. Little Chief was in slightly better demand, 800 shares being sold at 20@21c. Of Leadville Consolidated 700 shares changed hands at 18@19c. Iron Silver, which has not been traded in for some time past, this week shows a sale of 100 shares at 50c.

There were sales of 125 shares of Horn Silver at $3.20@$3.40. Ontario was in good demand this week; total sales aggregate 225 shares at $15.

Sales of El Cristo this week were 8,600 shares at 42c@50c, and of Monte Cristo, 3,800 shares at $3.25@$3.55.

The Governing Committee of the New York Stock Exchange has listed $250,000 additional capital stock of the Consolidated Kansas City Smelting & Refining Company, making total $2,560,000; $1,000,000 Cahaba Coal Mining Company, first mortgage, 6% 30 year gold bonds; $3,000,000 capital stock of the Tennessee Coal & Iron, and $6,200,000 5% 20-year debenture currency bonds of 1910 of the Illinois Steel Company. The capital stock of $18,650,600 will be listed, ex. the dividends payable March 10 and April 1, 1893.

Boston. March 9.

(From our Special Correspondent.)

The market for copper mining stocks the past week has held remarkably steady and prices fairly well maintained, in view of the depression in the general market and the high interest rates prevailing. There has been no great pressure to sell copper stocks, which would indicate that they have found their way into strong hands and are not carried to any extent on margins. There has been less activity in the Montana stocks this week, business being largely in Centennial and Osceola, both of which have been strong and have held the advance of last week.

Calumet & Hecla sold at $305, same as last week, and Tamarack at $160@$161. All the sales of Quincy were at $132, an advance of $2.

Centennial has been in good demand and sold from $8½ to $9¼. The reports from the mine indicate the possibilities of success in the developments now in progress, which, if realized, will make the stocks very valuable.

Osceola advanced to $36½ only, losing the fraction in the later sales.

The outlook at this mine is improving, and there is every reason to believe that good dividends will be earned and paid during the current year.

Franklin is dull and steady at $13, but Kearsarge has been heavy all the week and declined to $10, a loss of $1 from last week.

Atlantic lost ¼, with sales at $9¾.

The dealings in Boston & Montana were very light and the price declined from $32 to $31½.

Butte & Boston was offered more freely and also declined from $11 to $10¼, closing heavy.

There seems to be inquiry for the low-priced copper stock, and some sales are noted of Mesnard at 50c., Arnold at 50c., Allouez at 75c. Pontiac at 25@15c., and Hungarian at 15c.

Santa Fe appeared again at 5c. Wolverine sold at $2½ for round lots, and $2¾ for small lots.

Tamarack, Jr., was fairly strong at $19, a small lot of 5 shares selling at $18.

3 P. M.—There was very little done after the noon hour. Butte & Boston declined to $10, but Quincy advanced to $135, and Osceola to $36½@$36¼ for small lots.

San Francisco. March 3.

(From our Special Correspondent.)

To judge from the volume of trade in the exchanges during the two opening months of the current year, it appears as if mining stocks were destined to show a greater shrinkage than in 1892. A decline of nearly 50 per cent. on the two-months' trading as compared with the two opening months of 1892 has taken place. The sales in the Board during January and February aggregated 469,005 as compared with 806,285 shares during the same period of time last year.

The following companies have been dropped from the list by the San Francisco Stock Exchange for non-payment of annual dues: Comstock, Hendricks, North Occidental, Knickerbocker, Diana, Independence, Bodie Tunnel, Del Monte, Central and Locomotive.

During the week there has been a decline along the line of Comstock shares. Most of the Comstock companies will, on Monday next, show a balance on the wrong side of the ledger when assessments will be in order. These assessments have to some extent been discounted during the week, and the market probably will not decline many more points.

Of the North End, Comstocks Consolidated California & Virginia closed to-day at $2.50, a decline on the week's trade of 45 cents, Ophir sold for $1.85, Mexico for $1.65, Sierra Nevada for $1.15, and Union Consolidated for 90 cents.

In the middle group of Comstocks, Best & Belcher sold this afternoon for $1.50, Gould & Curry for 80 cents, Hall & Norcross for $1.05, Potosi for $1.05, and Savage for 70 cents.

The values of Gold Hill and South End stocks have been better sustained than the balance of the list. Belcher has sold for 65 cents; Bullion for 40 cents, Caledonia for 15 cents, Crown Point for 40 cents, Kentuck for 15 cents, Overman for 35 cents, and Yellow Jacket for 50 cents.

Nothing has been done with outside stock save in the case of the Bodies, the remainder being simply quoted much the same as a week ago. Of the Bodies, Bulwer Consolidated sold to-day for 25 cents and Bodie Consolidated for 5 cents, 10 cents being asked for the latter at the close.

SAN FRANCISCO, March 10th (*By telegraph*).—The opening quotations to-day were as follows: Best & Belcher, $1.55; Bodie, 5c.; Belle Isle, 10c.; Bulwer, 25c.; Challar, 60c.; Consolidated California & Virginia, $2.45; Eureka Consolidated, $1.50; Gould & Curry, 80c.; Hale & Norcross, $1.15; Mexican, $1.70.; Mono, 5c.; North Belle Isle, 10c.; Navajo, 15c.; Ophir, $1.90; Savage, 70c.; Sierra Nevada, $1.10; Union Consolidated, 90c.; Yellow Jacket, 50c.

MEETINGS.

Allouez Mining Company, at the office of the company, 76 Wall street, New York City, March 14th, at 3 P. M.

Bullion Mining Company, at the office of the company in Deadwood, S. D., March 14th, at 3 P. M.

Tennessee Coal, Iron and Railroad Company, at the office of the company, in Tracy City, Tenn., April 4th, at 12 o'clock noon.

Torch Lake Mining Company, at the office of the company, No. 31 Doane street, Boston, Mass., March 21st, at 1 P. M.

DIVIDENDS.

Minnesota Iron Company, dividend No. 11, of 1½%, $210,000, payable April 1st. Transfer books close March 18th and reopen April 3d.

Mollie Gibson Consolidated Mining and Milling Company, dividend No. 32, of 15c. per share, $150,000, payable March 15th at the office of the company, in Colorado Springs, Colo. Transfer books close March 8th and reopen March 16th.

METAL MARKET.

NEW YORK, Friday Evening, March 10, 1893.

Prices of Silver per Ounce Troy.

March.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1.	March	St. Ex.	London Pence	N. Y. Cts.	Value of sil. in $1.
4	£ 87½	38 5/16	83⅛	·634	8	£·85¾	38⅜	82⅞	·629
6	£·87½	38 5/16	83⅜	·63	9	£·86¼	38 5/16	83	·630
7	£·86½	38¼	83¼	·631	10	£·86¾	38¼	83¼	·632

Since our last report silver has been comparatively steady in London. The fluctuations in exchange, owing to high money and the uncertain policy of the government in regard to the immediate issue of bonds, have caused more or less variation here, within a small compass, in the price of silver, but there is no material change in the situation.

The United States Assay Office at New York reports the total receipts of silver for the week to be 111,000 ounces.

Government Silver Purchases.

The government has purchased during the week the following quantities of fine silver at the accompanying prices per fine ounce:

March 6th, 405,000 oz., at 83·7 to 83·75c.
March 8th, 295,000 oz., at 83·23 to 83·35c.
March 10th, 60,000 oz., at 83·58 to 83·64c.

Gold and Silver Exports and Imports at New York for Week Ending March 4th, 1893, and for Years from January 1st, 1893, 1892.

	Gold.		Silver.		Excess of Exports.
	Exports.	Imports.	Exports.	Imports.	
Week....	$673,780	$410,258	$621,885	$192,701	$693,706
1893.....	26,526,348	961,047	5,195,224	707,867	30,031,808
1892.....	9,117,613	2,963,382	4,712,932	281,783	10,585,380

Of the gold exported 409,000 in French coin went to Havana.

During the five days ending March 10th the exports and imports, so far as ascertained, have been as follows: Exports: Gold, $3,505,650; silver, $512,841. Imports: Gold, $1,175,053; silver, $116,489. Of the gold exported $2,300,000 went to Austria, being part of $5,000,000 which Lazard Frères have contracted to supply to Austria; $1,150,000 in foreign gold coin went to Havana. The greater part of the silver exported went to London, and of this over half was American bullion. No gold will be sent out on Saturday, and if exchange continues as low as at present none will go on Tuesday next.

NOTES OF THE WEEK.

According to Thursday's official Treasury statement the free gold was only $982,410, which is the lowest since the resumption of specie payments in 1878. To-day's report will show an increased amount, as Secretary Carlisle has accepted the offer of $1,000,000 in gold each from the Denver and Chicago banks in exchange for notes. The situation has also been improved owing to the stringency of money at this and other financial centers. Interest went as high as 50 per cent. on Tuesday, and the high rates naturally attract money.

Loaning rates have been unusually low for many months past, but at present currency is flowing West in unusual quantity, and this, combined with unusual stock transactions, has forced up the interest on money. During the week sterling exchange was quoted at 4.85, and gold cannot be shipped except at a loss. Due account, however, should be taken of the fact that the day of payment is only postponed and that large shipments of gold must yet be made unless foreign capital flows to the country for permanent investment or unless the balance of trade again becomes largely in our favor.

During the week it was reported first that Belmont & Co., then that Drexel, Morgan & Co. had arranged to float $50,000,000 of 4% bonds in Europe. These reports were somewhat premature, but we are semi-officially informed that Secretary Carlisle has made all arrangements to issue bonds, and that they will be issued as soon as the situation demands it. On March 9th Mr. Carlisle authorized the statement that he would exercise all the power, and discretion rested in him to uphold the credit of the government and to maintain the parity of gold and silver. It will be noticed that no mention is made in this of his determination to keep the $100,000,000 gold reserve intact, and from private sources we learn that he has as yet not made up his mind that this is necessary. Our advices indicate that the Secretary may use part of this fund if it be necessary to keep the Treasury notes at par *and if such use will not produce a panic*. If, however, a panic should seem imminent bonds would be sold.

The specie holdings of European banks at the beginning of March were as follows:

	March 2, 1893.		March 3, 1892.	
	Gold.	Silver.	Gold.	Silver.
	£	£	£	£
England..	27,024,031	.....	24,978,820	.....
France	66,169,683	50,797,739	55,570,000	50,557,000
Germany	31,0 9,000	11,379,000	56,630,000	42,230,000
Aust.-Hung'y	10,395,000	16,892,000	5,486,000	46,742,000
Netherlands	3,222,000	7,140,000	3,169,000	6,705,000
Nat. Belgium	3,012,667	1,521,333	2,799,333	1,359,667
Spain	7,612,000	5,415,000	7,152,000	4,998,000

Domestic and Foreign Coin.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars	$.65½	$.66
Peruvian soles and Chilian pesos	.60	.61
Victoria sovereigns	4.86	4.88
Twenty francs	3.86	3.89
Twenty marks	4.74	4.78
Spanish 25 pesetas	4.80	4.85

Copper.—The uncertain condition in which the money market has been and the high rates of interest prevailing, together with the apathy of buyers, have altogether combined in bringing about a slight decline in the price of lake copper, some sales of which, in the form of ingots for delivery, lighterage free to New York, have been made at 11·80c. and 11¾c. From most of the first hands, and particularly the larger companies, nothing is to be had at this price, Calumet & Hecla, for instance, holding out for 12½c. Casting copper is easier at 11@11½c. and Electrolytic has been selling at from 11¼@11⅝c. Arizona pig copper is not saleable at the moment, producers asking prices higher than those recently ruling. Altogether, the demand from consumers is rather light, although it is stated that all are fairly well supplied with orders. Although dull, the London market held its own until to-day, when G. M. B's dropped to £45. For the finer grades, which we quote as follows: English Tough, £47 15 s.@£48 5s.; Best Selected, £48 15 s @£49 5s.; Strong Sheets, £56@£57; India Sheets, £52@£53; Yellow Metal, £4 7s. 8d., a good demand exists, although it is spasmodic.

The exports of copper from the port of New York during the past week were as follows:

		Lbs.	
To Liverpool—	Copper Matte.		
S. S. Britannic	1,040 bags	116,100	$5,000
" Etruria	2,713 bags	326,427	14,000
To Liverpool—	Copper.		
S. S. Aurania	40 bbls	50,000	$6,000
To Hamburg—	Copper.		
S. S. Scandia	168 pigs	59,315	$2,000
" Scandia	6 pct. gs. samples	1,000	150
To Rotterdam—	Copper.		
S. S. Veendam	54 bbls	67,500	$8,500
" "	866 pigs	234,432	10,059

Tin.—The uncertainty of the last fifteen months has at last been done away with, but not until the trade was much disturbed at the last moment. Although when we closed our last report, or shortly after, it was known that the repealing act had been strangled by the Senate Finance Committee, on Monday morning most of the daily papers contained the startling news that the repeal had become a law. Naturally everyone was excited and although metal was offered at rather low values, 20¼ @ 20⅜ being asked not one bid was to be had. Meanwhile the officers of the Metal Exchange and the leading tin merchants had communicated with Washington, and late in the day found that probably the duty had not been touched. However, it was not until late on Tuesday afternoon that it was known positively that no change had been made, although in the morning Assistant Secretary of the Treasury Spaulding had telegraphed:

"In view of confusing statements steps have been taken to procure final evidence in regard to tin legislation; you will be advised of results." Through what blunder the false report was issued to the papers all over the country has not yet developed.

As the chances of an extra session of Congress being called to assemble before the fall grow less and less, and the feeling that the duty of 4% will have to be paid more general, consumers have altered their tactics and have come into the market freely, causing prices to advance quickly, the upward movement being accelerated by the fact that metal on the spot is scarce and dealers have to depend almost wholly on arrivals by steamers now coming in or soon due. The closing prices are for spot, 21¾ for April, 21¾ for May, and 21¾ for June. The foreign markets also hardened quite considerably, opening firm at £93 10s., and although reacting a little on that day they have advanced day by day and close at £95 for spot, and £94 15s. for three months. Shipments from the Far East must be made by steamers leaving before the end of March in order to get the tin here in time to come in free of duty, and as the available supplies are already contracted for and very little freight room is to be had, the London market has become practically the only source of supply, and holders there are naturally reluctant to part with their stocks.

Lead has been irregular without much business being done. Early in the week the price was 3.87½, then it became 3 92½, only to recede to 3 85 and to close at 87½@90. Under the circumstances not much confidence is shown, but the market remains firm nevertheless. In Europe the upward tendency continues, and Spanish lead is quoted at £9 17s. 6d. @£9 18s. 9d. and English at £10.

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: Lead very firm at the late decline with 3·65c. freely bid, and but little to be had at less than 3·67½c.

Chicago Lead Market.—The Post, Boynton, Strong Company telegraph us as follows: The market has been very quiet at 3·70c.@3.72½c., with some sales; latterly prices are firmer at 3·75c. asked, but no trades reported.

Spelter is very dull, owing to the persistent offerings of Western producers both for immediate and later shipment. Some effort to curtail production by mutual agreement has been made, but not meeting with the support of the majority of the smelters, the idea has been given up. We hear that some new smelting works will soon start up. The New York quotation is still 4·27½@·30.

Antimony is quiet but steady, Cookson's at 10¾@ ¾c., L. X. at 10⅝@¾c., and Hallett's at 10c.

Nickel.—There is an over-supply of this metal in the market, for it is being produced in larger quantities than consumption warrants. We are informed that large quantities were sold during February at 45c. per lb., and that producers are now willing to take 44c. on large time contracts. The quoted price of the metal ranges from 48c. to 50c.

Quicksilver.—There is no change to report of this market. Quotations continue: New York, $38; London, £6 7s. 6d.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, March. 10, 1893.

Pig Iron Production During Weeks Ending March 4th, 1892, and March 4th, 1893, and During Both Years to These Dates.

Fuel used.	Week ending Mar. 4, 1892.		Week ending Mar. 4, 1893.		From Jan., '92.	From Jan., '93.
Anthracite.	94	38 970	73	34,310	350 730	295,510
Coke	164	138,990	146	134,595	1,250,910	1,187 395
Charcoal	55	11,820	36	8,623	106,380	79,823
Totals	313	189,780	255	177,528	1,708,026	1,562,728

Prices: Southern, ex-steamer No. 1 F., $15.26; No. 2 F., $14.26; No. 3 F., $13.76; Gray Forge, $13 01, Northern, tide-water, No. 1 X, $15; No. 2 X, $14; No. 2 plain, $13.50; Gray Forge, $13. Southern irons are quoted, nominally, 26c. higher than Northern.

Scotch pig: Coltness, $21.50 to $22; Eglinton, $19 50 to $20.

There has been an increase of pig iron production, as compared with February, of 4,428 tons, the weekly output now being 178,528 tons, as against 173,000 in February. No change in price has followed upon the increase of output, and stocks, sold and unsold, have decreased from about 743,000 to about 735,000 tons.

Spiegeleisen and Ferromanganese.—There is nothing doing in either ferro or spiegel. The market continues dull and featureless. Quotations are: Ferro, $56.25@$56.75; Spiegel, $25.50@$26.

Steel Rails.—The price remains $29 at tidewater.

Rail Fastenings.—Prices rule as follows: Fish and angle plates, 1·55@1·65c. at mill; spikes, 1·9@2c.; bolts and square nuts, 2·40@2,70c hexagonal nuts, 2·70@2·80c. delivered.

Merchant Steel.—A slightly improved demand is reported and prices are a shade firmer. Quotations this week are: Mushet's special, 48c.; English tool steel, 15c net; American tool steel, 6½@7¼c; special grades, 13@18c.; crucible machinery steel, 4·75c.; crucible spring, 3·75c.; open hearth machinery, 2·25c.; open hearth spring, 2·30c.; tire steel, 2·25c.; toe calks, 2·25@2·50c.; first quality sheet, 10c.; second quality sheet, 8c.

Structural Iron and Steel.—There has been a fair inquiry for structural iron and steel during the week and several sales are reported, though with a single exception contracts have not been large. We quote: Beams, 2·3@2·55c., except for 20-in. beams, which are 2·75c.; angles, 1·95@2·15c.; sheared plates, 1·90@2·10c.; tees, 2·30@2·60c.; channels, 2·35@2·50c.; universal plates, 2@2·10c.; bridge plates, 2@2·10c., steel hoops, 1·90@8c. All on dock.

Buffalo. March 8.

(Special Report by Rogers, Brown & Co.)

Quite a large increase in inquiry has been noted during the week and a fair run of orders. Prices for Northern irons are lower than ever before recorded, while Southern irons, on account of the low prices at which they can be offered, are in considerable favor, and are being largely used in this section as softeners and neutralizers with Lake Superior ore iron. We quote on the cash basis f. o. b. cars Buffalo: No. 1 X foundry strong coke iron, Lake Superior ore, $14.50; No. 2 X foundry strong coke iron, Lake Superior ore, $13.75; Ohio strong softener, No. 1, $14.50; No. 2, $14; Jackson County silvery, No. 1, $17@$17.30; No. 2, $16.30@$16.80; Lake Superior charcoal, $17.25; Tennessee charcoal, $18; Southern soft, No. 1, $14; Alabama car wheel, $19; Hanging Rock charcoal, $20.50.

Chicago. March 9.

(From Our Special Correspondent.)

The west bound freight over Eastern railroads centering here is still much delayed, causing a deal of embarrassment and annoyance, as most of the roads are not yet in a position to accept transfer freight from connecting lines. A number of carloads of iron from Pittsburg have been on the road two, three and even four weeks and are not yet at hand, causing building contractors and cornice makers serious trouble in impeding construction work. To add to the vexatious situation and further harass the railroads, the switchmen on all lines entering Chicago, acting in concert, have demanded higher wages, and March 6th formally presented to the general managers a new schedule for their consideration.

The requested increase of pay amounts to 50c. a day, or an average of nearly 18%. At a recent meeting of the General Managers' Association, they severally pledged themselves not to accede to any demands to an increase in wages. That the situation is a grave one is admitted by all, and it will require conservative judgment to arrange an amicable compromise. There are now some 3,500 cars with exhibits for the World's Fair in and around Chicago and a strike would entail serious consequences.

The iron trade, taking a comprehensive view of the situation, shows little change from the conditions surrounding it last week. Crude iron of Northern make continues in fair demand, and several local furnaces have, by their recent large sales, been placed in a more independent position and are stiffer in their views. Finished material is still rather slow.

Pig Iron.—Local coke iron is if anything a little stronger. The heavy buying in February, which is still fairly well maintained, has enabled producers to assume a firmer attitude, and the market may be said to have been further strengthened by additional sales made through the week. Orders range from 200 to 500 tons, with one or two for larger amounts. Inquiry is fair, and from the present movement March will make a better showing than for the same month last year. Lake Superior charcoal iron is dull but prices hold very steady. Demands for Southern coke iron appear to be satisfied; anyhow there is only a light movement and buyers seem to think that at present figures they do not care to load up for future requirements. Orders are small, and persistent efforts of sellers only tends to decrease sales. Hence Southern iron of all grades is more or less depressed just now in this market.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $16.50@$17.25; Lake Superior coke, No. 1, $13.50@$14.00; No. 2, $13.25@$13.50. No. 3, $12.75@$13; Lake Superior Bessemer, $14.25; Lake Superior Scotch, $14.25@$14.75; American Scotch, $16.25@$16 75; Southern coke, foundry, No. 1, $14.25; No. 2, $13.35; No. 3, $13.00; Southern coke soft, No. 1, $13 35; No. 2, $13.00; Ohio silveries, No. 1, $16.50; No. 2, $16.00; Ohio strong softeners, No. 1, $16.75; No. 2, $16.25; Tennessee charcoal, No. 1, $17; No. 2, $16.50; Southern standard car wheel, $19.50@$20.

Steel Billets and Rods.—Recent sales of billets from stock have been made at $24.50. Rods are nominally unchanged at $33.

Structural Iron and Steel.—The specifications for the skeleton steelwork for Ferd. Peck's Chicago Stock Exchange will soon be in the market. The amount required will be between 40,000 and 50,000 tons. There is considerable work in sight. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, $1.90@$2; tees, $2.15@$2.25; universal plates, $1.95@

$2; sheared plates, $1.95@$2; beams and channels, $1.95@$2.25.

Plates.—Mill orders are light and slow, but warehouse business is more active than it has been, probably on account of the expected strike May 1. Steel sheets, 10 to 14, $2.30@$2.40; iron sheets, 10 to 14, $2.20@$2.30; tank steel, $1.90@$2; shell iron or steel, $2 50@$2.75; firebox steel. $4.25@$5.25; flange steel, $2.75@$3; boiler rivets, $4@$4.15; boiler tubes, all sizes, 60%.

Merchant Steel.—The firmness of the present prices of soft steel and the possibility of an advance are already causing some implement makers to gauge the market. Usually these contracts are not placed until May or June, but the rapid advance made in the use of steel may bring them into the market earlier. Further activity is noted in tool steel. Quotations are: Tool steel, $6.50@$6.75 and upward; tire steel, $2@$2.10; toe calk, $2.30@$2 40. Bessemer machinery, $2.10@$2.20. Bessemer bars, $1.70@$1.75; open hearth machinery, $2.30@$2.40; open hearth carriage spring, $2.10@$2.20; crucible spring, $3.75@$4.

Galvanized Sheet Iron.—Carload demand is quite good, but deliveries slow from mill. Warehouse business is quiet. Discounts are easy at 70 and 10% off on Juniata and 70 and 15% off on charcoal, and jobbing quantities at 70 and 5% off on the former and 70 and 10% off on the latter.

Black Sheet Iron.—Mill agents report improved inquiry from the jobbing trade and look for some good contracts this month. Quotations on iron sheets are 2·85c. for No. 27, common; steel sheets are 2·95c. Jobbers quote 3@3·10c. for iron and 3·10@3·15c. for steel, same gauge.

Bar Iron.—An order for 1,500 tons of car iron was place at 1·60c. flat by a car concern in Indiana. The volume of business is fair, and, while there are few large contracts being let, the daily wants of consumers average a moderately good tonnage. Prices here are 1·57½@1·60c. base on mill lots. Jobbing price is 1·70@1·75c. for less than carloads of iron or steel.

Steel Rails.—An inquiry is noted for 5,000 tons by a northwestern road, and local mills are entering orders which have been pending for some time for extensions. Inquiry continues good, and the outlook more promising each week. Quotations are steady at $30@$32 mill, and Eastern mills are selling carloads at $31.75 f. o. b. Chicago. Splice bar orders continue active. Prices are: 1·60@1·65c. for iron and steel splice bars; track bolts, square nuts, 2·55c.; hexagon, 2·65c.; spikes, 2·05@2·10c. according to style.

Nails.—Steel cut nails are in very moderate demand from mill at $1·25 base, equal to $1·42½ Chicago. Jobbers quote $1.50 in less than carloads. Wire nails are more active from factory at $1·65 Chicago and $1·70 in jobbing quantities.

Scrap.—Stocks in largest dealers' hands are lower on account of declining market and railroad offerings heavier than usual. Demand very quiet and prices lower and weak. Railroad, $15; No. 1 forge, $14; No. 1 mill, $9.50; fish plates, $15.50; axles, $18.50; horseshoes, $15; pipes and flues, $7; cast borings, $5.50; wrought turnings, $8; axle turnings, $9.50; machinery castings, $10; stove plates, $6.50; mixed steel, $10.; coil steel, $15; leaf steel, $15.50; tires, $14.50.

Old Material.—Nothing doing in iron rails and a nominal price would be $18. Steel rails are also very quiet and lower at $11@$15 according to condition. Car wheels are in some demand at $14.50.

Louisville. March 6.

(Special Report by Hall Brothers & Co.)

The market has remained without essential change; inquiries and sales generally have been in a small way with one or two exceptions. One large transaction, aggregating several thousand tons, is reported at very low figures. It is said sales of Grey Forge have been made equivalent to $8, Birmingham basis; this may be regarded as an exception, however, and not the rule, as we know of certain offers equivalent to that figure that have been declined by producers, and the equivalent of $8.25, Birmingham basis, has been declined by purchasers. Deliveries have varied materially, some being made for many months ahead; but on a lower basis of prices sellers have urged short deliveries as much as possible, but extended deliveries have been granted.

Hot Blast Foundry Irons.—Southern coke No. 1, $13.50@$13.75; Southern coke No. 2, $12.50@$12.75; Southern coke No. 3, $12@$12.25; Southern charcoal No. 1, $16@$17; Southern charcoal No. 2, $15.50@$16.

Forge Irons.—Neutral coke, $11.50@$12; mottled, $11@$11.25.

Car Wheel and Malleable Irons.—Southern (standard brands), $20@$21; Southern (other brands), $18.50@$19.50; Lake Superior, $19.50@$20.50.

Philadelphia. March 9.

(From our Special Correspondent.)

Pig Iron.—The statement must be made that prices are still pointing downward, and that more iron is being offered than is promptly taken, except-ing, of course, for standard brands. For months past these have been quite well sold up, and are firm in price even now, when shadings are common for common makers. Pig iron makers feel rather discouraged with developmonts so far this month. There is rather more activity in foundry irons than forge relatively. No. 1 runs from $14.25 Southern to $15.25 Northern; No. 2, $13.25 Southern to $14 50 Northern. Forge, $12.50@$13. A good deal of forge has been offered lately. Bessemer is about $16.

Muck Bars.—Nothing but an advance in soft steel will help the muck bar mills.

Billets.—Steady hammering has failed to bring prices down and there is considerable dickering going on, but as yet no corresponding business. Eastern quotations are about $24 50.

Merchant Iron.—A poor report is made by both storekeepers and mill men. City mills are pretty busy, but the Schuylkill Valley mills are not well supplied. Prices run all the way from 1 50 to 1·70.

Nails.—Demand is irregular, owing to unsatisfactory card rates.

Skelp.—An improved demand has been presented for skelp, and a general expansion of business is expected. No increase in selling prices is probable.

Wrought Iron Pipe.—The extremely low prices are attracting customers, but their orders are small. They promise to do better soon.

Sheet Iron.—As so often reported before the sheet mills are doing a good business in all kinds of sheet mill products, but at prices which are barely remunerative.

Plate and Tank.—A cutting of prices for desirable orders is reported everywhere. New business is looming up and the mill people are after it with figures that are very disappointing. The manufacturers admit this month's business has not been what was expected. Tank, 1·70; shell, 1.90.

Structural Material.—A great deal of new business is in sight. Prices have been named on most of it. They are the lowest which have ever been made in this market on structural material, and yet business is of small proportions.

Steel Rails.—Rail makers speak hopefully of the near future, and think there will be a good many orders placed soon; none very large, except for two or three long lines in the West. The fact is, demand is off for the present. Quotations, $29.

Old Rails.—A good week's business has been done in old rails for next month's delivery at $18@$18.25.

Scrap.—Railroad is about all that is selling quickly. General lots were taken this week at $16.

Pittsburg. March 7.

(From our Special Correspondent.)

Raw Iron and Steel.—The volume of business since our last report was fully up to expectations, showing very conclusively that there is no falling off in the consumption of raw material. The general feeling at present favors an advance in values, particularly for the better grades of Bessemer and soft steel billets. Notwithstanding the fact that sales have been unusually large, there seems to be no falling off in the demand. Most of the furnaces working on Bessemer are well sold up, having orders booked that will keep them employed for some time to come. Prices are certainly down to a very low figure, but on the other hand there is such an enormous capacity for production that it is just as difficult to start an upward movement, so that as already intimated the monotony may continue for some time. Averaging the pig iron market all the way through it is probable there are but few changes in prices of the medium kinds; there is plenty to go round at current prices and quite enough to satisfy consumers that they can afford to be leisurely in placing their orders. For the present the key to the situation seems to be the West, and the slightest change there will probably be reflected on other leading markets. Competition for orders for finished material was never sharper between the East and the West than it is at the present time. The unsettled condition of the ore market confirms buyers in their policy of inaction, although it is believed that the deadlock (in ore) will be broken at an early date, and then possibly prices of pig iron may turn in the same direction. Producers of pig iron are contending for cheaper ores, and have, in fact, discounted the future to some extent, but it is by no means certain that their claims will be conceded. A leading Eastern dealer describes the situation: Contrary to expectations, prices show some tendency toward improvement, and, with a little encouragement, it would not be a hard task to put them a shade higher.

The immediate foundation for this feeling is due to increased cost on foreign ores and a sympathetic movement in Western markets. Bessemer pig is about 50 cents up from its lowest, and billets are from 75 cents to $1 dearer, and while no great amount of business has been done at the advance, markets show more disposition to ask still higher figures than to concede anything in buyer's favor. This, as already stated, is due to the increased cost of materials and the possibility of still greater enhancement in values. This feature has been duly observed by consumers, so that they are in a measure prepared to go with the stream, providing that it seems likely to develop additional force. For the time being, therefore, it may be said that while there is only a fair degree of activity, there is a manifest disposition to regard the situation favorably. The outlook: The undertone of the market stronger; Bessemer and Grey Forge firm; steel billets firm, held at an advance; sales liberal; other descriptions show but little change.

Coke Smelted Lake and Native Ore.

Tons.	Cash.
4,000 B., Mar., April..	$13.40
2,000 B., Mar., April..	13.45
2,000 G. I., Mar., April	12.25
2,000 B., Mar., April..	12.50
2,000 B. Mar.	13.45
1,500 G. F., Mar.	12.25
1,000 G. F., all ore	12 60
1,000 M. I.	12.25
1,000 G. F.	12.25
1,000 B., prompt.	13.45
1,000 B., Mar., April	13 50
700 M. I.	12.25
500 G. F.	12 50
500 O. M.	12.50
450 No. 1 F.	14.00
400 No. 2 F.	13.00
200 W. I	12.00
150 No. 1 S.	16.00
Charcoal.	
150 C. B.	25.00
150 No. 2 F.	19.00
100 C. B	26 00
100 No. 3 F.	18.50
100 No. 1 F.	20.00
Billets.	
4,000 B., Mar., Apr., M., A. M.	22.00
2,250 B. & S., Mar., Apr., M	22.25
1,500 B., Mar., Apr., M.	22.50
1,000 B., Mar	22.25
500 B. & S., Mar.	22.50
500 B., spot	22.25

Muck Bar.

500 N.		24.50
500 N.		24.25
400 N.		24.25
300 N.		24.25
Iron Skelp.		
600 W. G.	1.50	4 m.
380 S.	1.72½	4 m.
350 N. G	1.50	4 m.
Skelp Steel.		
860 W. G.	1.50	4 m.
Sheet Bars.		
350 at mill, adv.		28 75
Steel Wire Rods.		
800 $5 Amer. at mill dec.		30.20
Ferro-Manganese.		
150 80% dvd.		59.60
100 80% dvd		59.50
Spelter.		
125 Spelter		4 13
Blooms, Billets and Bar Ends.		
1,000 Billets and Bar Ends		15.25
250 Beam Ends		15.50
Old Iron and Steel Rails.		
500 Mxd. S. R.		15.00
400 "		14.75
400 "		15.00
400 O. I. Rails		20.00
400 "		20.25
200 "		19.75
100 "		20.00

Scrap Material.—500 Tons No. 1 R. R. W. Scrap, net, 16.00; 500 Tons Steel Scrap, gross, 15.75; 500 Tons Cast Scrap, gross, 12.00; 300 Tons Cast Borings, gross, 7.75; 200 Tons Cut Pipe, net, 13.00; 150 Tons R. R. Springs, gross, 21.00; 100 Tons Car Wheels, gross, 13.50; 50 Tons Iron Axles, Hammered, net, 25.00.

ABBREVIATIONS: B., Bessemer; G. F., Grey Forge; F., Foundry; S., Silvery; O. M., Open Mill; C. B., Cold Blast; N. G., Narrow Grooved; W. G., Wide Grooved; M. I., Mill Iron; N., Neutral; S. S. Short Steel.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, March 10th.

Statement of shipments of anthracite coal (approximated), for week ending March 4th, 1893, compared with the corresponding period last year:

Regions.	March 4, 1893. Tons.	March 5, 1892. Tons.	Difference.
Wyoming Region	512,524	361,237 Inc.	151,287
Lehigh Region	133,207	68,935 Inc.	34,272
Schuylkill region	238,6.9	250,397 Dec.	11,768
Total	884,360	710,569 Inc.	173,791
Total for year to date	6,667,864	6,579,612 Inc.	88,252

PRODUCTION OF BITUMINOUS COAL for week ending March 4th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1893. Week.	1893. Year.	1892. Year.
Phila. & Erie R. R.	2,210	26,230	16,291
Cumberland, Md.	70,483	579,521	563,825
Barclay, Pa.	1,323	14,450	39,787
Broad Top, Pa.	17,827	140,410	104,002
Clearfield, Pa.	99,333	716,426	641,407
Allegheny, Pa.	22,916	189,026	202,989
Beach Creek, Pa.	29,876	387,795	414,511
Pocahontas Flat Top.	47,876	432.410	455,665
Kanawha, W. Va.	69,127	562,717	440,220
Total	360,971	3,048,985	2,878,697

WESTERN SHIPMENTS.

	1893. Week.	1893. Year.	1892. Year.
Pittsburg, Pa.	27,381	234,906	238,343
Westmoreland, Pa.	32,580	347,886	319,936
Monongahela, Pa.	10,086	130,907	82,209
Totals	70,047	713,699	640,488
Grand totals	431,018	3,762,684	3,519,185

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending March 4th, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 116,248 tons; year 985,312 tons; to corresponding date in 1892, 1,063,345 tons.

Anthracite.

There seems to be some cutting of circular rates, although, as usual, it is difficult to know who was originally responsible. Coal that has been selling for $4 65, commission off, has been bought, so it is stated, for $4.50. Circular rates will be maintained by the sales agents as long as possible, but it by no means follows that coal cannot be bought for less than full circular. The fact is that we are rapidly approaching the time when the demand for domestic sizes will begin to show signs of lessening, and concessions that would follow upon this state of affairs naturally and without comment have already begun to be solicited and given.

It is not likely, however, that such sales exert any untoward influence upon the general market just now, and the great bulk of transactions are at the old prices, shaded here and there, of course, as circumstances may require. All rail coal is moving without serious hindrance, but the stocks at tidewater still show the effect of the severest winter we have had for 30 years. Early in the week the Reading had 90,000 tons at Port Richmond, which it was anxious to move, but vessels were and are scarce, and the skippers know that quite as well as the shippers.

The New York "Herald" of March 9th has a dispatch from Trenton, N. J., announcing the discovery of a bill which, it is said, the Philadelphia & Reading is back of, and which if passed will reestablish the coal combine under sanction of the law. The bill was presented in the House, but escaped scrutiny until Attorney-General John P. Stockton discovered the extent of the provisions of the apparently harmless bill.

The bill is to amend section 1 of the act to authorize railroad companies incorporated under the laws of New Jersey and adjoining States to consolidate their franchises and property.

The section which the bill amends makes it lawful for railroad corporations to consolidate with any other corporation in the State, and the amendment is the addition of the words "or any adjoining State," which would allow the Central to consolidate with the Reading, and practically repeal the act of 1885, under which Chancellor McGill declared the coal combine illegal in the recent suits. Attorney-General Stockton, when interviewed about the matter, said that its effect will be, if passed, to repeal, practically, the act of 1885, which forbids any railroad to lease its road or franchise to any foreign corporation, or to consolidate its property with that of a foreign corporation until the consent of the legislature shall have been obtained. The law repealed by the act is the one on which the Chancellor decided that the coal combination was illegal. The Chancellor held that the act was constitutional and the lease was made in defiance of an expressly prohibitory statute. The bill carefully conceals the fact that it repeals the act of 1885 by making it a supplement to the General Railroad law authorizing the leasing of roads to foreign corporations and repealing all acts inconsistent with its provisions. The "Herald" dispatch further says that the Pennsylvania Railroad lobby detected the scheme almost as soon as the Attorney General, and between the two there is promise of a bitter fight if the bill gets any further advanced than it is at present.

The coal transported over the Philadelphia & Reading system from the 1st of January to the week ending March 4th was 5,370,141 tons, a decrease of 286,878 tons as compared with the corresponding period of last year. During the week ending March 4th the amount transported was 448,158 tons, an increase of 43,668 tons, as compared with the corresponding period of last year.

The report of the inspector of the First Anthracite District of Pennsylvania shows a production of 5,834,638 tons for 1892, an increase of 829,535 tons over the output for 1891. The output of the Third and Fourth Districts has already been given in the ENGINEERING AND MINING JOURNAL, the former on February 18th and the latter on February 11th. These three districts, First, Third and Fourth, produced last year 20,933,848 tons, as against 18,769,452 tons in 1891, an increase of 2,164,396 tons.

Shipments for the week ending February 27th, 1892, and February 25th, 1893, are as follows, approximately, in tons:

	February 27, 1892.	February 25, 1893.
Wyoming region	381,491	298,188
Lehigh "	107,825	61,410
Schuylkill "	242,283	156,897
	731,599	516,465
Total for year to date	5,869,043	5,783,504

Prices are quoted by the Philadelphia & Reading, at loading ports, as follows, being the full circular rates:

	Broken.	Egg.	Stove.	Chestnut.
Hard white ash	$4.10	$4.50	$4.75	$4.65
Free " "	4.00	4.10	4.75	4.65
Shamokin	....	4.60	4.95	4.65
Schuylkill	....	4.65	5.10	4.90
Lorberry	..	4.65	5.10	4.90
Lykens Valley	5.10	5.65	6.15	5.25

Bituminous.

This season of the year brings contracts again to the front. Some informal meetings have been held, but the Cumberland producers have not yet met. One large producer has, so it is said, closed contracts for the year, but generally speaking there is no rush. There is one element of uncertainty that must be considered, and that is the inevitable interference with transportation facilities by the Chicago Fair.

The inauguration of the President in Washington last week, slight as may be deemed its possibilities of interference, did hamper the trade to no inconsiderable extent. As one large concern puts it: We lost one day entirely because not a single car was given to us, and two days more in part because of the lack of shipping facilities. It is self-evident that the Chicago Fair will have a powerful effect upon the transportation departments of the great seaboard coal roads, and this fact should be carefully considered in the making of contracts for delivery of coal during the summer and fall. The encampment of the various Masonic bodies at Denver and Omaha last summer certainly had an injurious effect upon the delivery of coal, and now the experiences of the last few days come to corroborate the opinion that any extraordinary event which includes the handling of large numbers of people may be looked to as a disturbing factor of the situation.

Some of the roads are building additional cars and engines, but in spite of these precautions the trade will sufer. We do not willingly play the rôle of Cassandra, but we do wish to point out to our friends some of the impediments to rapid delivery that may arise this year. The great trouble in the coal trade is lack of cars when cars are needed, and upon this rock many have come to grief.

Some amusement has been created in coal circles by the leaking out of the terms of a contract said to have been made by Williams & Co., with which firm a son of President Roberts of the Pennsylvania Railroad Company, is more or less identified. It appears that the contract in question called for the delivery of the coal at tidewater, Perth Amboy, probably, at $2 per ton. When from this is subtracted the open rate of $1.40 per ton freight, the 60 cents left would not go far toward establishing a living profit. To mine coal and put it on the cars for 60 cents per ton, and pay also the incidental charges and the dividends, would certainly be a great feat. We suspect that the real facts have not yet appeared, or that some one made a blunder of the first magnitude. Berwind, White & Co. have long been known as closely identified with great interests in the Pennsylvania, and it is not likely that they would see a fat contract go a-begging. If they cannot put coal at tidewater for $2 no one else need try, and young Mr. Roberts will probably regret that he did not figure on the thing a while longer.

The Nova Scotia coal people, otherwise known as the Dominion Coal Company, are figuring on discharging coal at Boston for 75 cents per ton freight, which might mean $2.00 or $2.25 coal in Boston, exclusive of the duty of 75 cents per ton. We will see what we will see, but we will certainly *not* see the duty taken off or reduced this year. Even with the duty repealed, the Dominion company will have a lively time of it anywhere in New England and will have to fight for whatever it gets.

Prices in New York Harbor are from $3.10 to $3.15, and at lower tidewater ports $2.50 to $2.60.

Charter rates are: New York to Rhode Island, 65 to 75 cents; to Boston, 75 to 90 cents. Philadelphia to Sound ports, $1.10 to $1.15; to Boston, $1.15; to Portsmouth, $1.25. Baltimore to Sound ports, $1.10 to $1.15; to Boston, $1.20 to $1.25.

Delaware Bay is now open, and Philadelphia can be reached by all classes of vessels.

Boston. March 8.

(From our Special Correspondent.)

The anthracite coal market is still quiet. Some cutting in prices by individual operators is reported, but the companies keep the prices firm. Every one is waiting for developments, which are expected at Tuesday's meeting or the subsequent meeting, to be held some time in the following fortnight. Stocks here in New England are very light on all kinds of coal.

We quote f. o. b. prices at New York on free burning coal: Stove $4.75; egg, $4.40; free broken, $4; chestnut, $4.65. Lykens Valley (at Philadelphia): Broken, $4.85; egg, $5.45; stove, $6; chestnut, $5.

The mills are commencing to close contracts now. The Merrimac mills are said to have closed for 25,000 tons and the Hamilton for 5,000 tons. Both these are of Lowell, Mass. The Pacific mills, of Lawrence, Mass., are said to have closed for a part or the whole of their supply which amounts to about 25,000 or 30,000 tons per year. All contracts so far are said to have been closed on the basis of $2.50 per ton f. o. b. Baltimore and Philadelphia. It is rumored about, however, that offers have been made 10c. per ton under this figure. Bituminous coal on cars here is worth $4 per ton for George's Creek, and $3.85 for Cumberland.

Freight rates are still firm, as tonnage is anything but plentiful. Boston parties have hard work to get tonnage from New York. Rates are: From New York, 85c.@$1; from Philadelphia, $1.25; from Baltimore, $1.25; from Newport News, $1.10.

Retailers are doing a good business and are maintaining prices. If March is as stormy as usual there will probably be more coal consumed than in either of the past two months.

Prices here are: Stove, $6.50; nut, $6.50; egg, $6.25; furnace, $6.00; Franklin, $7.75; Lehigh egg, $6.50; Lehigh furnace, $6.25; soft coal, $4.25@$5.00. Wharf prices are 50c. less than the foregoing.

The receipts of coal at the port of Boston for the week ending March 5th were 21,998 tons of anthracite and 31,552 tons of bituminous. Since January 1st the receipts have been 184,104 tons of anthracite and 167,419 tons of bituminous, against 225,045 tons of anthracite and 79,399 tons of bituminous for the corresponding time last year.

Buffalo. March 9.

(Special Report by Rogers, Brown & Co.)

Anthracite and bituminous coal continue in good demand, and quotations unchanged. Fine and warm weather has prevailed during daylight for the past 48 hours, so that less fuel has been consumed. Rumors of cutting prices of anthracite at some Eastern points have reached here, but it appears that nothing of the kind has occurred hereabouts or in Western New York. Bituminous coal is coming into Buffalo quite freely, but yet not in quantity sufficient to affect prices or block the railroad sidings.

The coal shipping trestle of the Scotts' Docks, on the Blackwell Canal, in this city, has been leased by Messrs. Coxe Brothers & Co., and is being repaired and put in good working order, so that a part of the Pennsylvania coal traffic can be handled. Mr. J. B. Conard is the local agent of the company.

The South Buffalo plans for building docks, piers, coal trestles, etc., from Stony Point to Buffalo Breakwater have come to a temporary halt. The financial backers have not come to the front in consequence of the heavy shipments of gold and the troubles of the Philadelphia & Reading Railroad. The projectors, however, are sanguine of ultimate success.

Vesselmen talk of 60c. per net ton free on and off for freight on coal hence to Chicago at opening of navigation. From the appearance of the ice on Lake Erie and the news received from other ports, the arrival and departure of vessels at Buffalo will be long deferred.

The New York, Ontario & Western Railroad will soon make connections with the New York Central Railroad so as to reach Buffalo. Rumor says that other arrangements are being made to connect that line with the Grand Trunk and the Canadian Pacific railroads.

The Cataract Construction Company, at Niagara Falls, intend building a second tunnel parallel with the one just completed. Subway conduits are to be used to bring the electricity generated to Buffalo. The consumption of this power will be enormous if conclusions can be drawn from the number of manufacturing establishments that have applied for it, as all interested expect that the electric power will cost considerably less than that at present furnished by steam.

Mr. Mark P. Norton, who has been with Mr. E. L. Hedstrom for some years, has been appointed traveling agent for Messrs. Coxe Bros. & Co. for New York State and Canada, with headquarters in Buffalo.

Messrs. H. K. Wick & Co., of Buffalo, are reported to have secured an additional contract from the Grand Trunk Railway, of Canada, for 50,000 net tons of soft coal. Messrs. Morgan, Moore & Co. and Messrs. Osborn, Sager & Co., both of Cleveland, have 50,000 net tons each, and Mr. Thomas Loomis, of Buffalo, 25,000 net tons, of the awards of the same contract.

Chicago. March 9.

(From our Special Correspondent.)

Owing to the mild weather trade is dull in all branches, which, together with the uncertainty as to whether the lower prices for anthracite before the opening of navigation will be made the last of this month or at the end of April, compels dealers and large consumers to continue their hand-to-mouth policy. There are some concessions being made from the circular price by certain shippers on sizes of which they have an overstock, amounting in some case to 50c. a ton. The rumored changes in the *personnel* of the Reading combination, as given in some recent dispatches, are exciting considerable comment among the trade.

The more conservative element do not fear any dissolution or change in the policy of doing business for the ensuing season; while there are others equally as well posted as to the situation, who predict the coming year is going to be another demoralized one in the anthracite coal trade. The opinion is very generally expressed that should the opening prices for spring be made April 1, a good business would result, as many foresighted buyers would probably stock up for the fall trade with all-rail coal, before the World's Fair business would begin to interfere with the transportation of freight. Most shippers are in receipt of a fair amount of coal, though some have not yet got to the point where they have more coal than they require for old orders and the new business coming in.

Bituminous coal is not quite so lively, as owing to the mild weather most of the larger consumers and dealers are curtailing their orders, notwithstanding which there is none too much coal on track. On the contrary, there is quite a shortage of some kinds. The main feature of interest, outside of the expected trouble with the switchmen, is the action of the Chicago & Eastern Illinois railroad in not furnishing any empty cars this week to the coal mines located on its line and on that of the Chicago and Indiana coal road for this market. This is accounted for in this way—to enable the roads to clear up and deliver from their tracks the large number of loaded coal cars which had accumulated during the ice and snow blockades and intensely cold weather last month.

Another is the evident desire of the railroads to be in good shape in case of the threatened strike of the switchmen taking an active and violent form, as they would naturally prefer having their tracks full of empties rather than with loaded cars during the anticipated trouble with labor organizations. Whether there is trouble or not, this condition of affairs, together with the usual spring restlessness and talk of the advance in the cost of mining, will make next week a hard and unsatisfactory one for dealers depending on their daily shipments for supplies of coal. It, therefore, looks to the writer, from his knowledge of the comparatively small amount of fuel coming from Ohio and other regions to this

market, as though the stringency of January and February would be repeated next week. So far prices remain stationary.

Coke continues in fair demand, but without any great activity. Supplies only moderate, as most of the Eastern roads are badly congested with freight. Prices are steady.

Quotations are: $4.65 furnace; $5.05 foundry, crushed; $5.40 Connellsville; West Virginia: $3.90 furnace, $4.10 foundry; New River foundry, $4 75; Walston: $4.65 furnace, $5 foundry.

Circular prices are at the following rates: Lehigh lump, $6.50; large egg, $5.85; small egg, range and chestnut, $6.10. Retail prices per ton are: Large egg, $7.25; small egg, range and chestnut, $7.25.

Prices of bituminous per ton of 2,000 lbs., f. o. b. Chicago, are: Pittsburg, $3.40; Hocking Valley, $3.10; Youghiogheny, $3.25; Illinois block, $2; Brazil block, $2.60@$2.75.

Pittsburg. March. 9.

(From our Special Correspondent.)

Coal.—The coal trade of Pittsburg is certainly doomed; for the present a settlement seems as far off as ever. There are a few men at work. As the strike continues the Monongahela coal trade is slowly passing away to other fields. The Marmet Coal Company sent the "Ark" out with 15 empties to the Kanawha region for loading. The "Charles Hook" and "Delta" left with 20 empties to the Kanawha. Old river men claim that this is the first time in the history of the Monongahela River coal trade they have seen empty barges go down the river. The Alabama and Tennessee coal is getting the New Orleans market, and is also slowly acquiring the Memphis trade. The Alabama coal men get their coal mined for two cents and two and one-half cents a bushel, while the mines here are holding out for three and one-half cents; any one can see the position of the Pittsburg operators. The following dispatch was received from Cincinnati last evening: Local dealers are becoming very anxious over the coal strike at Pittsburg. There is less coal in the market than for years. The Chesapeake & Ohio Railroad has, within the past year, opened up a new coal field that now brings daily to Covington and Cincinnati 80,000 bushels. This new source of supply is regular and places in the sidings fresh coal every day at Cincinnati, low enough to keep the price down to $2.15 per ton, in the face of the fact that there was no coal shipped from Pittsburg from July to December.

Connellsville Coke.—The demand for coke has fallen off for the first time in many weeks, and overbalanced the gain of the previous week. Eastern shipments suffered most, and are liable to be light this week. The coke operators express a very hopeful feeling and maintain confidence in the railroad companies being able shortly to improve their car supply as well as increase their motive power. The demand remains good, and is expected to increase. As there are over 4,000 idle ovens in the region, with the probabilities of several hundred being built the coming summer, there is no doubt but what any increase in demand can be supplied.

There are 74 active and 10 idle plants in the region; 37 of these plants, with 8,320 ovens, ran 6 days while the remaining ran 5 days.

The shipments for the week aggregated 124,811 tons distributed as follows: To Pittsburg, 1,720 cars; points east of Pittsburg, 1,369 cars; west of Pittsburg, 3,480 cars; total, 6,569 cars. Western shipments decreased 120 cars; eastern 749 cars, while Pittsburg increased 15 cars; a total decrease of 854 cars. Prices nominal, unchanged.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, March 10.

Heavy Chemicals.—The non-arrival of the "Naronic" and the heavy consumptive demand has caused an advance in the price of bleaching powder on the spot, and quotations range from 3@3¼c. The "Naronic" has on board between 600 and 700 casks of bleaching powder, besides quantities of other chemicals. There is no marked scarcity in any other heavy chemical except bleach, by reason of the arrival of other vessels, unless, possibly, it is caustic soda, the stocks of which have been absorbed by the good demand. The other chemicals have been in fair demand but without change as to prices. We quote this week: Caustic soda, 60%, 2·95@3·10c.; 70%, 2·70@2·80c.; 74%, 2·72½@2·82½c.; 76%, 2·80@2·90c. Carbonated soda ash, 48%, 1·40@1·60c.; 58%, 1·35@1·40c. Alkali, 48%, 1·35@1·40c.; 58%, 1·30@1·40c., according to package. Sal soda, English, on the spot, 1·05@1·10c.; American, 90@95c.; bleaching powder, 3@3·50c.

Acids.—The good demand for the various acids, which we have reported in this column for some time past, continues. There is no marked scarcity of acid, all reports to the contrary notwithstanding, and prices are absolutely without change from our last week's report. We quote: Acid, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic $1.75@$2, according to quality; muriatic, 18°, 90c.@$1.10; 20°, $1@$1.25; 22°, $1.25@$1.50; nitric, 40°, $4; 42°, $4.50@$4.75; sulphuric, 90c.@$1.10; mixed acids, according to mixture, oxalic, $6.15@$6.50. Blue vitriol is quoted all the way from $3.25 to $3.75; glycerine for nitro-glycerine, 11¼@12½, according to quality and quantity.

Brimstone.—There is nothing new to report of the brimstone market. It continues quiet. Prices are practically unchanged, as follows: Best unmixed seconds, on the spot, $21.50; to arrive, May-June shipments, $20.25; best unmixed thirds, on the spot, $20; May-June shipments, $19.25.

Fertilizing Chemicals.—The continued scarcity of ammoniates and the active demand for them, from both North and South, have caused a still further advance in prices, and manufacturers of fertilizers are commencing to talk of a corresponding advance in the price of the finished product. Dried blood is held at $3.20@$3.25 per unit, and the demand is so good and the stocks are so scarce that no distinction is made between high grade and low grade. Of azotine there are no stocks on hand, and the price is nominally quoted at $3.20@$3.25. Other quotations are as follows: Sulphate of ammonia, on the spot, $3.20@$3.30 for bone goods and $3.20@$3.35 for gas liquor. Acidulated fish scrap, no stocks on hand; dried scrap is scarce and is quoted at $31 f. o. b. fish factory. Tankage, high grade $31@$33; low grade, $29@$31. Bone tankage, $24@$25; bone meal, $24@$25.50.

Phosphate Rock.—There is nothing of interest to report of the phosphate market this week. Quotations are unchanged: $4.75 for 55% rock, free alongside at Charleston, S. C.

The potash salts generally have been in very fair demand. The price of double manure salts as fixed by the syndicate is as follows: New York and Boston, $1.12; Philadelphia, $1.14½; Charleston and Savannah, $1.17 cwt. basis, 48@50% in 50 ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis, 90%: New York and Boston, $2.07; Philadelphia, $2.09½; Charleston and Savannah, $2.12; sulphate of potash, 96-99%, basis 90%, is 4% higher.

Muriate of Potash.—There is nothing new to report of this market. Prices for 1893 are as follows: New York or Boston, $1.7c; Philadelphia, $1.80½; Southern ports, $1.83.

Kainit.—There has been a fair demand for this salt. Quotations for shipments previous to September are as follows: New York, Philadelphia and Boston, $8.75 for foreign invoice weight and test, and $9 for actual weight; Charleston, Savannah and Wilmington, $9 50 for invoice weight and test, and $9.75 for actual weight. Shipments after September 1st, 25c. higher.

Nitrate of Soda.—This market is slightly lower than last week. A fair demand is reported and quotations are as follows: On the spot, $2.35; futures. $1.72½@$2.25, according to position.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Acid—Acetic, chem. pure .16@.17
Commercial, in bbls. and cbys. .015@.017
Carbonic, liquefied, ℔ lb. .18@.25
Chromic, chem. pure, ℔ lb. 1.00
for batteries .40
Hydrobromic, dilute, U. S. P. .25
Hydrocyanic, U. S. P. .45
Hydrofluoric .20
Alcohol—95%, ℔ gall $2.30@$2.40
Absolute $3.80
Ammoniated $2.80
Alum—Lump, ℔ cwt. $1.75@$1.80
Ground, ℔ cwt. $1.85@$1.90
Powdered, ℔ lb. .04½@.06
Lump ℔ ton, Liverpool £5
Aluminum Chloride—Pure, ℔ lb. $1.25
Amalgamating solution, ℔ lb. .60
Sulphate, ℔ cwt $1.90@$2.50
Ammonia—Sul., in bbl. lots, ℔ lb. 02½@.03
Carbonate, ℔ lb., English and German, .07½@.07¾
Muriate, white, in bbls., ℔ lb. .08½
Aqua Ammonia—(in cbys) 18° ℔ lb. .03@.04
20°, ℔ lb. .04@.05
26°, ℔ lb. .05@.05½
Antimony—Oxymur, ℔ lb. .04@.06
Regulus, ℔ lb. .10@.11½
Argols—Red, powdered, ℔ lb. .15
Arsenic—White, powdered ℔ lb. .03@.03½
Red ℔ lb. .065@.07
Yellow .08@.09
White at Plymouth, ℔ ton £12 2 6
Asbestos—Canadian, ℔ ton $50@$300
Italian, ℔ ton, c. i. f. L'pool £18@£60
Ashes—Pot, 1st sorts, ℔ lb. 4.75@5
Pearl .06@.06¼
Asphaltum—
Prime Cuban, ℔ lb. .04@.05
Hard Cuban, ℔ ton $28.00@$30.00
Trinidad, refined, ℔ ton $30.00@$35.00
Egyptian and Syrian, ℔ lb. .05@.07½
Californian, at mine, ℔ ton $12.00@$26.00
at San Francisco, ℔ ton, $15.00@$29.00
Barium—Carbonate, pure, ℔ lb. .45
Carbonate, commercial, ℔ lb. .05@.10
Chlorate, crystal, ℔ lb. .75
Chloride, commercial, ℔ lb. .05@.10
pure, ℔ lb. .16
Iodide, ℔ oz. .40
Nitrate, ℔ lb. .06½@.07½
Sulph., Am. prime white, ℔ ton $17.50@$19
Sulph., foreign, floated, ℔ ton $21@$23
Sulph., off color, ℔ ton $11.50@$14.00
Carb., lump, f. o. b. L'pool, ℔ ton £6
No. 1, Casks, Runcorn, " " £4 10 0
No 2, bags, Runcorn, " " £3 15 0
Bauxite—℔ ton $10.00
Bichromate of Potash—Scotch, ℔ lb. .11@.12
American, ℔ lb. .11@.12
Bichromate of Soda—℔ lb. .09½@.10
Borax—Refined, ℔ lb., in car lots .08@.09
San Francisco .08@.08½
Concentrated, in car lots .07¼@.08
Refined, Liverpool ℔ ton £2
Bromine—℔ lb. .15@0.2
Cadmium Minion—℔ lb. $2.00
Cadmium Iodide—℔ lb. $5.50
Chalk—℔ ton $1.40@$1.75
Precipitated, ℔ lb. .05@.06
China Clay—English, ℔ ton $13@$18.00
Domestic, ℔ ton $9@$11
Chlorine Water—℔ lb. .10
Chrome Yellow—℔ lb. .10@.25
Chrome Iron Ore—℔ ton, San Francisco $10.00
Chromalum—Pure, ℔ lb. .40
Commercial, ℔ lb. .12
Cobalt—Oxide, ℔ lb. $1.90@$2.00
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary, ℔ lb. 03¼@.03½
" " extra .04½
Nitrate, ℔ lb. .40
Copperas—Common, ℔ 100 lbs. .90@$1.00
Best, ℔ 100 lbs. $1.35@$1.50
Liverpool, ℔ ton, in casks £2@£2 10s.
Corundum—Powdered, ℔ lb. .04½@.09
Flour, ℔ lb. .03
Cryolite—Powdered, ℔ lb., bbl. lots. .07
Emery—Grain, ℔ lb. (℔ kg.) .04½@.05
Flour, ℔ lb. .02½@.10
Epsom Salt—℔ lb. 01@.01¼
Feldspar—Ground, ℔ ton .$6.00@$10.00
Crude $2.00@$3 00
Fluorspar—Powdrd, No. 1, ℔ ton. $20@$30
Lump, at mine $6@$8
French Chalk—
Fuller's Earth—Lump, ℔ ton. $16@$20
Glauber's Salt—in bbls., ℔ lb. .01@.01¼
Glass—Ground, ℔ lb. .10
Gold—Chloride, pure, crystals, ℔ oz. $1 .00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g. a. v., ℔ doz. $5.50
Chloride and sodium, ℔ oz. $6.00
15 gr., c. v., ℔ doz. $2.88
Oxide, ℔ oz. $27.25
Gypsum—Calcined, ℔ bbl. $1.25@$1.50
Land Plaster
Iodine—Resublimed $3.30@$3 35
Iridium—Oxide ℔ lb. $90
Iron—Nitrate, 40°, ℔ lb. .01@.01½
47°, ℔ lb. .02@.02½
Kaolin—*See China Clay.*
Kieserite—℔ ton $9@$10
Lead—Red, American, ℔ lb. .06¾@.07¼
White, American, in oil, ℔ lb. .06¾@.07¼
White, English, ℔ lb., in oil .08½@.08¾
Acetate, or sugar of, white .06@.06½
Granulated
Nitrate .09@.10
Lime Acetate—Am. Brown .90@.95
" Gray .$1.75@$1.87½
Litharge—Powdered, ℔ lb. .06¾@.07¼
English flake, ℔ lb. .09@.09¼
Magnesite—Crude, ℔ ton of 1,015 kilos $14.75
Calcined, ℔ ton of 2,240 lbs $22.00
Brick, ℔ ton of 2,240 lbs $47.50
Manganese—Ore, per unit .23@.28
Oxide, ground, ℔ lb. .02½@.06½
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb. .62@.64
Powdered, ℔ lb. .60
Marble Dust—℔ bbl. $1.25
Metallic Paint—Brown ℔ ton. $20@$25
Red $20@$25
Mineral Wool—Ordinary slag .01½
Ordinary rock .02½
Ground, ℔ ton
Mica—In sheets according to size, 1st quality, ℔ lb. .25@$6.00
Naphtha—Black
Nitre Cake—℔ ton $10.00
Ochre—Rochelle, ℔ lb. $1.10@$1.50
Washed Nat Oxf'rd, Lump, ℔ lb. .06½@.06¾
Washed Nat Oxf'rd, Powder, ℔ lb. .07@.07½
Golden, ℔ lb. .03@.05
Domestic, ℔ ton $12@$20
Oils, Mineral—
Cylinder, light filtered, ℔ gal. .14@.16
Dark filtered, ℔ gal. .10@.13
Extra cold test, ℔ gal. .2@.24
Dark steam refined, ℔ gal. .09@.12
Phosphorus—℔ lb. .5@.55
Precip., red, ℔ lb. .82@.85
white, ℔ lb. .85@.90
Platinic Chloride—℔ oz. $7
Plumbago—Ceylon, ℔ lb. .04@.05
American, ℔ lb. .05@.07
Potassium—Cyanide, ℔ lb., C. P. 67%, ℔ lb. .70 .45
fused .40
Bromide, domestic, ℔ lb. .25@.28
Chlorate, English, ℔ lb. .14@.15
Chlorate, powdered, English, ℔ lb. .14½@.15¾
Carbonate, ℔ lb., by casks, 82% .04½@.05
Caustic, ℔ lb., pure slick .06@.06½
Iodide, ℔ lb. $2.58@$2.80
Nitrate, refined, ℔ lb. .06@.08
Bichromate, ℔ lb. .10@.11½
Yellow Prussiate, ℔ lb. .23
Red Prussiate, ℔ lb. .42@.45
Pumice Stone—Select lumps, ℔ lb. 03½@.15
Original cks., ℔ lb. .01½@.02
Powdered, pure, ℔ lb. .01½@.01¾
Pyrites—Non-cupreous, p. units. .12@.15
Quartz—Ground, ℔ ton $6.00@$10.00
Rotten Stone, Powdered, ℔ lb. .03¼@.03¾
Lump, ℔ lb. .06@.07
Original cks., ℔ lb. .04½@.05¼
Rubbing stone, ℔ lb. .03½@.04
Sal Ammoniac—lump, in bbls., ℔ lb. .80¼
Salt—Liverpool, ground, ℔ sack .70
Domestic, fine, ℔ ton $7@$7.5
Common, fine, ℔ ton $4.50@$5
Turk's Island, ℔ bush .26@.28
Salt Cake—℔ ton $10.0 @$15.00
Saltpeter—Crude, ℔ lb. .03¾@.04
Soapstone—Ground, ℔ ton $6@8
Block and slab according to size.
Sodium—Prussiate, ℔ lb. .22@.24
Phosphate, ℔ lb. .04@.05
Stannate, ℔ lb. .06@.12
Tungstate, ℔ lb. .
Hyposulphite, ℔ lb., in casks .0235@.025
Strontium—Nitrate, ℔ lb. .03¾@.09
Sulphur—Roll, ℔ lb. .02½
Flour, ℔ lb. .02¾
Sylvinit, 27@35%, S.O.P., per unit .40
Talc—Ground French, ℔ lb. .01¼@.01½
American No. 1, ℔ lb. .01½@.01¾
American No. 2 006
Terra Alba—French, ℔ lb. .65@.80
English, ℔ lb. .65@.80
American, No. 1, ℔ lb. .60@.70
American, No. 2, ℔ lb. .45@.56
Tin—Crystals, in kegs or bbls. .14@.10
feathered or flossed. .20
Muriate, single .07@.05
Double or strong, 54° B. .10@.15
Oxymur, or nitro .19
Vermilion—Imp. English, ℔ lb. .85@.90
Am. quicksilver, bulk .57 @.6
Am. quicksilver, bags .58 @ .6
Chinese .85 @$1.00
Trieste .90 @ .95
American .11½@ .12
Zinc White—Am., Dry, ℔ lb. .04½@ .05
Antwerp, Red Seal, ℔ lb. .06¾@.07
Paris, Red Seal, ℔ lb. .07⅞@.08
Muriate solution .06
Sulphate crystals, in bbls., ℔ lb. .03¾

THE RARER METALS.

Aluminum—℔ lb. .50@.65
Arsenic—(Metallic), per lb. .40
Barium—(Metallic), per gram $4.00
Bismuth—(Metallic), per lb. $2.25
Cadmium—(Metallic), per lb. $1.00
Calcium—(Metallic), per gram $10.00
Cerium—(Metallic), per gram. $7.50
Chromium—(Metallic), per gram. $1.00
Cobalt—(Metallic), per lb. $6.00
Didymium—(Metallic), per gram. $9.00
Erbium—(Metallic), per gram $7.50
Gallium—(Metallic), per gram $140.00
Glucinum—(Metallic), per gram $12.00
Indium—(Metallic), per gram. $9.00
Iridium—(Fused), per oz. $12.00
Lanthanum—(Metallic), per gr. $10.00
Lithium—(Metallic), per gram $10.00
Magnesium—(Powdered), per lb. $4.00
Manganese—(Metallic), per lb. $1.10
Chem. pure, per oz. $10.00
Molybdenum—(Metallic), per gm .50
Niobium—(Metallic), ger gram $5.00
Osmium—(Metallic), per oz. $65.00
Palladium—(Metallic), per oz. $35.00
Platinum—(Plate), per oz. $9.75
Potassium—(Metallic), per lb. $25.00
Rhodium—(Metallic), per gram $5.00
Ruthenium—(Metallic), per gm. $5.50
Rubidium—(Metallic), per gram. $2.00
Selenium—(Metallic), per oz. $1.80
Sodium—(Metallic), per lb. .50@.75
Strontium—(Metallic), per gm .60
Tantalum—(Metallic), per gram. $9.00
Telurium—(Metallic), per lb. $5.00
Thallium—(Metallic), per gram .20
Titanium—(Metallic), per gram $2.20
Thorium—(Metallic), per gram $17.00
Tungsten—(Metallic), per lb. .80
Uranium—(Oxide), per lb. $5.00
Metallic, per gm .20
Vanadium—(Metallic), per gm $22.00
Yttrium—(Metallic), per gram $9.00
Zirconium—(Metallic), per oz $65.00

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Mar. 4		Mar 6.		Mar. 7.		Mar. 8.		Mar. 9.		Mar 10.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.													
Alice, Mont.													
Amador, Cal.													
Atlantic, Mich.													
Belcher, Nev.													
Belle Isle, Nev.													
Bodie Cons., Cal.													
Bos. & Mont., Mont													
Breece, Colo.													
Bulwer, Cal.													
Caledonia, S. Dak.													
Catalpa, Colo.													
Chrysolite, Colo.							22						300
Colorado Central, Colo.													
Commonwealth, Nev.													
Comstock T. bonds, Nev.													
" scrip., Nev.													
Cons. Cal. & Va., Nev.	2 65		2 50								2.60		40
Crown Point, Nev.													
Deadwood, Dak.													
Enterprise													
Eureka, Cons., Nev.													
Father de Smet, Dak.													
Freeland, Colo.													
Gould & Curry, Nev.													
Grand Prize, Nev.													
Hale & Norcross, Nev.			1.25								1 25		200
Homestake, Dak.													
Horn-Silver, Utah.					3.40						3-20		125
Independence, Nev.													
Iron Hill, Dak							.50						100
Iron Silver, Colo.													
Leadville Cons., Colo.					.18				.19		.21	20	700
Little Chief, Colo.	.30												800
Martin White, Nev.													
Minnesota Iron	65								.65				23
Mt. Diablo, Nev.													
Navajo, Nev.													
N. Belle Isle, Nev.													
Ontario, Utah.			15.00				15 00		15.00				245
Ophir, Nev.	2.00						1.90						200
Overman, Nev.													
Plymouth, Cal.									80				200
Quicksilver, Pref., Cal.									14.00		3.00		100
" Com., Cal.									3-00				200
Quincy, Mich.													
Robinson Cons., Colo.	.32												100
Savage, Nev.													
Sierra Nevada, Nev.	1.25										1.30		200
Silver Cord, Colo.													
Silver King, Ariz.													
Silver Min. of L. Valley													
Small Hopes, Colo.													
Standard Cons., Cal.					1.50								100
Yellow Jacket, Nev.			55										100

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Mar. 4		Mar. 6		Mar 7.		Mar 8		Mar 9.		Mar. 10.		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alpha., Nev.													
Alta, Nev													
American Flag, Colo.													
Andes, Cal.													
Astoria, Cal.													
Augusta, Ga.													
" bonds.													
Barcelona, Nev.													
Belmont, Cal.	23												200
Best & Belcher, Nev.	1 65												100
Bonanza King, Cal.													
Brunswick, Cal.	.06		.06		.06		.06		.06	.03			4,200
Bullion, Nev.													
Butte & Bost., Mont.													
Castle Creek, Idaho.													
Chollar													
Comstock T., Nev.	.12		.12						.11				1,300
Con. Imperial, Nev.													
Con. Pacific, Cal.													
Crescent, Colo.													
Del Monte, Nev.													
El Cristo, Rep. of Col.	50				45		50	42	.49				8,600
Emmett, Colo													
Exchequer, Nev.													
Independence, Nev.													
Julia, Nev.													
Justice, Nev													
Kentuck, Nev													
Lacrosse, Colo.													
Lee Basin, Colo.													
Mexican, Nev.							1 80				1.80		200
Middle Bar, Cal.													
Monitor, Colo.													
Monte Cristo, N. S. of C.	3.55		3 55		3.55		3 50	3.40	3.30		3.25		3,800
Nevada Queen, Nev.													
N. Standard, Cal.													
N. Commonwealth, Nev.													
Occidental, Nev.													
Oriental & Miller, Nev.													
Phœnix Lead, Colo.													
Phœnix of Ariz.													
Potosi, Nev.													
Rappahannock, Va.													
S. Sebastian, S. Sal.													
Santiago.													
Scorpion, Nev.													
Seg. Belcher, Nev													
Shoshone, Idaho.													
Silver Hill, Nev.													
Sullivan Con., Dak.													
Sutro Tunnel, Nev.													
Syndicate, Cal.													
Tornado Con., Nev.			05								.05		1,100
Union Cons., Nev.											1.00		100
Utah, Nev													

*Ex-dividend. †Dealt in New York Stock Ex. Unlisted securities. ‡Assessment paid. ‖Assessment unpaid. Dividend shares sold, 4,033 Non dividend shares sold, 19,600. Total shares sold, 23,693.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Mar. 3.	Mar. 4.	Mar. 6	Mar. 7.	Mar. 8.	Mar. 9.	SALES.
Atlantic, Mich.				9.75		9.75	150
Bodie, Cal.							
Bonanza Development.							
Bost. & Mont., Mont.	32.00	32 00	31.50	32.00 31.25	30 63 31.50	31.50	900
Breece, Colo.							
Calumet & Hecla, Mich.			305	305	305	305	47
Catalpa, Colo.							
Central, Mich.							
Cœur d'Alene, Id.							
Con. Cal. & Va., Nev.							
Dunkin, Colo.							
Eureka, Nev.							
Franklin, Mich.		13.00	13.00				11
Honorine, Utah.							
Horn Silver, Utah.							
Kearsarge, Mich.	11.00	10.50	10.75	10.50	10 50 10.38	10.50 10 00	625
Lake Superior, Iron.							
Little Pittsburg, Colo.							
Minnesota Iron, Minn.							
Napa, Cal.							
Ontario, Utah.							
Osceola, Mich.	35.75 35.25	36.25 35.50	36 25 35.75	36.75 36 00	36 50 36.25	36.50 36.00	900
Quincy, Mich.	132	128	132	132	132	135	101
Ridge, Mich.							
Sierra Nevada, Nev.							
Silver King, Ariz.							
Stormont, Utah.							
Tamarack, Mich.	160		161			160	61
Tecumseh, Mich.							

NAME OF COMPANY.	Mar. 3.	Mar. 4.	Mar. 6.	Mar. 7.	Mar. 8.	Mar. 9.	SALES.
Allouez, Mich.			.75				300
Arnold, Mich.							300
Aztec, Mich.							
Brunswick, Cal.							
Butte & Boston, Mont.	11 00 10 63	10.50			10.50	10 25 10.00	1,060
Centennial, Mich.	9.00 8 75	8 75	9.00 8.75	9 25 9 00		9.00 8.50	1,070
Colchis, N. Mex.							
Copper Falls, Mich.							
Crescent, Colo.							
Dana, Mich.							
Don Enrique, Mex.							
Geyser, Colo.							
Hanover, Mich.							
Humboldt, Mich.							
Hungarian, Mich.			.15				200
Huron, Mich.							
Mesnard, Mich.			50				200
National, Mich.							
Native, Mich.							
Oriental & M., Nev.							
Phœnix, Ariz.							
Pontiac, Mich.		25		15			267
Rappahannock, Va.				.05			300
Santa Fe, N. Mex.							
Shoshone, Idaho.							
South Side, Mich.							
Tamarack, Jr., Mich.	19.50 19.00			18 00			210
Washington, Mich.							
Wolverine, Mich.			2.50	2.75			110

Dividend shares sold, 2,798. Non dividend shares sold, 3,717 Total shares sold, 6 515.

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amount of last	Dividends. Total paid.	Dividends. Date & amount of last.
1	Adams, s. L. C. Colo.	$1,500,000	150,000	$10	*		$637,500	Jan.. 1892 .05
2	Alaska-Treadwell, g. Al'ska	5,000,000	200,000	25			1,450,000	Oct. 1897 .37½
3	Alice, s. Mont.	10,000,000	400,000	25	*		975,000	Nov.. 1891 .06¼
4	Alma & Nel Wood., g Idaho	300,000	30,000	10	*		60,000	Jan.. 1889 .50
5	Amador, g. Cal.	1,250,000	250,000	5	*		31,250	Aug.. 1890 .12½
6	American, g. Colo..	3,000,000	300,000	10	*		225,000	Mar.. 1892 .05
7	American Belle, s. g. c Colo.	2,000,000	400,000	5	*		50,000	April 1891 .12½
8	Americ'n & Nettie, g. s Colo..		900,000				175,800	Mar.. 1892 .05
9	Atlantic, c. Mich.	1,000,000	40,000	25	280,000	April 1875 $1.00	700,000	Feb.. 1891 1.00
10	Argenta, s. Nev..	10,000,000	100,000	100	335,000	July. 1889 .10	40,000	Feb.. 1880 .20
11	Argyle, g. Colo..	1,000,000	1,000,000	1	*		20,000	Mar. 1892 .01
12	Aspen Mg. & S., s. L. Colo..	2,000,000	200,000	10	*		760,000	Sept. 1892 .10
13	Aurora, L. Mich..	2,500,000	100,000	25			650,000	Feb.. 1893 2 00
14	Badger, s. Ont..	250,000	50,000	5			37,500	Mar.. 1890 .25
15	Bald Butte Mont	250,000	250,000	1	*		72,500	Mar.. 1892 .03
16	Bates Hunter, s. g. Colo..	1,000,000	1,000,000	1				Dec.. 1891 .00¾
17	Belle Isle, s. Nev..	10,000,000	100,000	100	220 00	Aug. 1892 .10	300,000	Dec.. 1879 .25
18	Belcher, s. g. Nev..	10,400,000	104,000	100	3,16 000	May 1892 .25	15,397,000	April 1876 1.00
19	Bellevue, Idaho, s. L. Idaho	1,250,000	125,000	10	1: 000	Dec.. 1889 .25	200,000	Jan.. 1890 .10
20	Best Friend. Colo.	1,000,000	1,000,000	1			90,000	Feb.. 1892 .01
21	Bi-Metallic, s. g. Mont.	5,000,000	200,000	25			2,222,000	Feb.. 1893 .20
22	Bodie Con., g. L. Cal..	10,000,000	100,000	100	0,000	June 1890 .25	1,602,572	April 1885 .50
23	Boston & Mont., g. Mont.	2,500,000	250,000	10	*		520,000	June 1886 .15
24	Boston & Mont., C. S. Mont.	3,125,000	125,000	25	*		2,075,000	Nov.. 1891 1.00
25	Brooklyn Lead, L. s. Utah.	500,000	50,000	10			127,000	July. 1887 .05
26	Bulwer, g. Cal..	10,000,000	100,000	10	30,000	Aug.. 1889 .25	191,000	Oct.. 1892 .05
27	Bunker Hill & S. s. L. Idaho	3,000,000	300,000	10	*		150,000	Oct.. 1888 .06⅔
28	Caledonia, g. Dak..	10,000,000	100,000	100	505,000	May. 1885 .15	192,000	Oct.. 1890 .06
29	Calliope, s. Colo..	1,000,000	1,000,000				140,000	Jan.. 1891 .00½
30	Calumet & Hecla c Mich..	2,500,000	100,000	25	1,200,000	.. ..	38,850,000	Dec. 1892 5 00
31	Centen'l-Eureka, s. L. Utah.	1,500,000	30,000	50			607,500	Feb. 1893 .50
32	Central, c. Mich..	500,000	30,000	25	100,000	Oct.. 1861 .65	1,970,300	Feb.. 1891 1.00
33	Champion, g Cal		34,000	10			114,900	Dec 1892 .10
34	Chrysolite, s. L. Colo..	10,000,000	200,000	50	*		1,650,000	Dec.. 1884 .25
35	Clay County, g. Colo..	200,000	200,000	1	*		56,000	Nov.. 1891 .02
36	Clinton Con, g. c Cal..	5,000,000	100,000	5			90,000	Nov.. 1891 .10
37	Cœur D'Alene, s. L. Idaho	5,000,000	500,000	10			310,000	Nov.. 1891 .02
38	Colorado Central, s. L. Colo..	2,750,000	275,000	10	*		502,500	Jan.. 1892 .05
39	Commonwealth, s. Nev..	10,000,000	100,000	100	190,000	Sept. 1892 .10	20,000	Nov.. 1890 .20
40	Confidence, s. L. Nev..	2,496,000	24,960	100	1,589,550	Aug.. 1892 .50	199,680	April 1889 1.00
41	Cons. Cal. & Va., s. g Nev..	21,600,000	216,000	100	108,000	Jan.. 1885 .20	3,682,800	Aug. 1891 .50
42	Contention, s. Ariz..	12,500,000	250,000	50			2,637,500	Aug. 1892 .20
43	Cook's Peak, s. N. M..	2,000,000	200,000	10			114,532	Nov. 1892 .05
44	Cop. Queen Con., c. Ariz..	2,000,000	20,000	10			1,360,000	Feb. 1893 .50
4	Coptis. Nev.	10,000,000	100,000	100			67,000	July.. 1892 .12
46	Cortez, s. Nev..	1,500,000	300,000	05	*		687,000	Mar.. 1892 .50
47	Crescent, s. L. g. Utah.	15,000,000	60,000	25	60,000	Oct 1892 .10	238,000	Oct.. 1888 .03
48	Crown Point, g. s. Nev..	10,000,000	100,000	100	2,700,000	Sept. 1892 .25	11,898,000	Jan.. 1875 2.00
49	Cumberland, L. s. Mont.	5,000,000	500,000	10	*		15,000	Nov.. 1889 .06
50	Daly, s. L. Utah.	3,000,000	150,000	20			2,687,500	Feb 1893 .25
51	Deer Creek, s. g. Idaho	1,000,000	200,000	5	*		20,000	June 1889 .05
52	Deadwood-Terra, g. Dak..	5,000,000	200,000	25	*		1,150,000	Oct.. 1892 .05
53	DeLamar, s. g. Idaho	2,000,000	400,000	5			550,000	Oct... 1892 .25
4	Derbec B. Grav., g. Cal..	10,000,000	100,000	0	100,000	Sept. 1892 .10	60,.30	Aug.. 1891 .10

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and am't of last.
1	Alliance, s. g. Utah.	$100,000	100,000	$1	$120,000	Feb.. 1891 .20
2	Allouez, c. Mich.	2,000,000	80,000	25	787,000	Jan.. 1890 .70
3	Alpha Con., g. s. Nev..	3,000,000	30,000	100	209,000	Sept. 1892 .10
4	Alta, s. Nev..	10,080,000	100,800	100	3,369,880	Jan. 1892 .70
5	American. c. Idaho	5,000,000	500,000	10		
6	American Flag, s. Colo..	1,250,000	125,000	1	300,000	June 1887
7	Amity, s. Colo..	250,000	250,000	20		
8	Anchor, s. L. g. Utah.	3,000,000	150,000	5	410,000	June 1890 .20
9	Anglo-Montana, Lt. Mont.	600,000	120,000	125		
10	Appalachian, g. N. C.	1,750,000	1,400,000	20		
11	Arizona, c. Ariz..	3,575,000	160,000	2		
12	Astoria, g. Cal..	200,000	100,000	5		
13	Atlanta, g. s. Idaho	3,250,000	650,000	25		
14	Barcelona, g. Nev..	5,000,000	500,000	5	*	
15	Bear Creek Idaho		20,000	1		
16	Belmont, g. Cal..	500,000	500,000	100	*	
17	Belmont, s. Nev..	5,000,000	50,000	100	735,000	April 1886 .10
18	Best & Belcher, s. g. Nev..	10,080,000	100,800	10	2,405,275	Aug.. 1892 .25
19	Black Oak, g. Cal..	3,000,000	300,000	100	*	
20	Boston Con., g. Cal..	10,000,000	100,000	1	170,000	Nov.. 1882 .25
21	Brownlow, g. Colo..	250,000	250,000	5		
22	Brunswick, g. Cal..	2,000,000	400,000	2		
23	Buckeye, s. L. Mont.	1,000,000	500,000	100		
24	Bullion, s. g. Nev.	10,000,000	100,000	100	2,890,000	Aug. 1892 .25
25	Burlington, g. s. Cal..	10,000,000	100,000			
26	Butte & Boston, c. s. Mont.	5,000,000	200,000	10		
27	Butte Queen, g. Cal.	1,000,000	100,000	1	6,000	Jan.. 1892 .04
28	Calaveras, g. Cal..	500,000	500,000	5		
29	Calaveras Con., g. Cal..	800,000	160,000	10		
30	California, c Cal..	1,000,000	100,000	5	9,000	Mar. 1892 .03
31	California Con. L. Q. Cal..	2,250,000	450,000	10		
32	Camille, g Ga	1,500,000	150,000	5		
33	Carisa, g. Wy..	500,000	100,000	2	*	
34	Carupano, g. s. L. c. Ven..	200,000	100,000	2	*	
35	Cashier, g. s. Colo..	500,000	250,000	100	*	
36	Challenge Con., g. s. Nev..	5,000,000	50,000	10		
37	Cherokee, g. Cal..	1,500,000	150,000	100		
38	Chollar, s. g. Nev..	11,200,000	112,000	2	1,820,000	May.. 1892 .50
39	Cleveland, T. Dak.	1,000,000	500,000	10	*	
40	Colchis, s. g. N. M.	500,000	150,000	5		
41	Colorado, s. Colo..	1,625,000	325,000	1		
42	Comstock, s. Utah.	1,250,000	250,000	100		
43	Comstock Tun. Nev..	10,000,000	100,000	100	35,000	Mar. 1887 .15
44	Con. Imperial, g. s Nev..	5,000,000	50,000	50	2,062,500	Jan.. 1892 .25
45	Con. New York, s. g. Nev..	5,000,000	100,000	100	110,000	Mar.. 1892 .10
46	Con. Pacific, g. Cal..	6,000,000	60,000	10	198,000	June 1890 10
47	Con. Silver, s. Mo..	2,500,000	250,000	5		
48	Cordova Union, g. Cal..	1,000,000	200,000	10		
49	Crescent, s. L. Colo..	3,000,000	300,000	100	*	
50	Crocker, s. Ariz.	10,000,000	100,000	1	165,000	Aug. 1892 .05
51	Crowell, g. N. C.	500,000	500,000	1		
52	Dahlonega, g. Ga..	250,000	250,000	10	*	
53	Dandy, s. Colo..	5,000,000	500,000			
54	Decatur s Colo..	1,800,000	300,000			

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares No.	Par	Assessments. Total Levied.	Date and amount of last		Dividends. Total paid.	Date & amount of last.	
55*	Dexter, G. S	Nev..	1,000,000	100,000	10	.....	.....	.....	80,000	Aug..	.25
56	Dunkin, S. L.	Colo..	5,000,000	200 00	25	*	.....	.....	390,000	Oct..	.05
57	Elkhorn, S. L.	Mont.	1,000,000	200 00	5	*	.....	.....	885,545	Dec	.50
58	Enterprise, S.	Colo..	2,500,000	5?0,000	5	*	.....	.....	750,000	Feb.	.05
59	Eureka Con., S. L. G.	Nev...	1,000,000	50,000	100	550,000	June	1889	5,017,500	Jan	.25
60	Evening Star, S. L.	Colo..	500,000	50,000	10	*	.....	.....	1,450,000	Dec.	.2
61	Father de Smet, G.	Dak..	10,000,000	100,000	100	200,000	Nov..	1878	1.00	1,125,000	Dec..	1885	.20
62	Franklin, C.	Mich..	1,000,000	40,000	25	220,000	June	1871	.....	1,100,00	July	1892	2.00
63	Freeland, S. G.	Colo..	5,000,000	200,000	25	*	.....	.....	.....	190,000	July.	1886	.10
64	Garfield Lt., G. S.	Nev	500,000	100,000	5	.....	.....	.....	.....	90.000	April	1888	.12½
65	Glengarry	Mont.	1,000,000	100,000	10	...	.....	.....	.....	10,000	June	1891	.10
66	Gold Rock	Colo..	500,000	500,000	1	.....	.....	.....	.....	.....	Dec..	1891	.01
67	Golden Reward	S.Dak	1,250,000	250,000	5	.....	.....	.....	.....	75,000	Feb.	1893	.02
68	Gould & Curry, S. G.	Nev...	10,800,000	108,000	100	4,591,200	June	1892	.25	3,826,800	Oct..	1870	10.00
69	Grand Prize, S.	Nev...	10,000,000	100,000	100	785,000	Jan..	1890	.30	495,000	Mar.	1884	.25
70	Granite, S. L.	Idaho	500,000	500,000	1	*	.....	.....	.....	83,400	Nov..	1890	.02
71	Granite Mountain, S.	Mont.	10,000,000	400,000	25	.....	.....	.....	.....	12,120,000	July.	1892	.20
72	Great Western, L. Q.	Cal...	5,000,000	50,000	100	*	.....	.....	.....	394,861	Dec.	1892	.25
73	Green Mountain, G.	Cal...	1,250,000	125,000	10	*	.....	.....	.....	212,000	Nov..	1881	.07½
74	Hale & Norcross, G. S.	Nev...	11,200,000	112,000	100	5,584,800	Aug.	1892	.50	1,822,000	Aug.	1888	.50
75	Hecla Con., S. G. L. C.	Mont.	1,500,000	90,000	50	.....	.....	.....	.....	1,950,000	Feb.	1893	.50
76	Hel'a Mg. & Red, S. L. G.	Mont.	3,315,000	663,000	5	*	.....	.....	.....	197,970	July.	1886	.06
77	Helena & Frisco, S. L.	Idaho	2,500,000	500,000	5	.....	.....	.....	.....	170,000	July..	891	.02
78	Helena & Victor	Mont.	1,000,000	200,000	5	*	.....	.....	.....	80,000	May..	1891	.05
79	*Holmes, S.	Nev...	10,000,000	100,000	100	370,000	May.	1890	.25	75,000	April	1886	.25
80	Homestake, G.	Dak..	12,500,000	125,000	100	200,000	July.	1878	*1.00	4,953,750	Feb..	1893	.10
81	Honorine, S. L.	Utah.	500,000	250,000	2	37,500	April	1889	.05	125,000	Sept.	1887	.05
82	Hope, S.	Mont.	1,000,000	100,000	10	*	.....	.....	.....	468,252	Feb	1893	.50
83	Horn-Silver, S. L.	Utah.	10,000,000	400,000	25	*	.....	.....	.....	4,650,000	Dec.	1892	.12½
84	Hubert, G.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....	247,000	Dec..	1889	.00½
85	Idaho, G.	Cal...	310,000	3,100	100	*	.....	.....	.....	5,419,250	Dec.	1892	2.50
86	Illinois, S.	N. M..	100,000	100,000	1	*	.....	.....	.....	45,000	April	1889	.20
87	Iron Hill, S.	Dak..	2,500,000	250,000	10	134,000	July.	1889	.08	156,250	Nov..	1887	.07½
88	Iron Mountain, S.	Mont.	5,000,000	500,000	10	*	.....	.....	.....	215,000	Aug..	1892	.03
89	Iron-Silver, S. L.	Colo..	10,000,000	500,000	20	*	.....	.....	.....	2,500,000	April	1889	.20
90	Jack Rabbit, G.	Cal...	10,000,000	100,000	100	100,000	Sept.	1892	.10	260,000	Aug	1891	.10
91	Jackson, G. S.	Nev.	5,000,000	50,000	100	237,500	Nov..	1880	.20	60,000	Jan.	1891	.10
92	Kearsarge, C.	Mich.	1,000,000	40,000	25	190.000	Oct..	1887	1.00	80,000	Jan.	1890	2.00
93	Kennedy	Cal...	10,000,000	100,000	100	.....	.....	.....	.....	387,000	May..	892	.15
94	Kentuck, S. G.	Nev.	3,000,000	30,000	100	454,180	Oct..	1891	.15	1,350,000	Dec.	1886	.10
95	La Plata, S. L.	Colo..	2,000,000	200,000	10	*	.....	.....	.....	610,000	Sept.	1882	.30
96	Leadville Con., S. L.	Colo..	4,000,000	400,000	10	*	.....	.....	.....	304,000	May..	1892	.03
97	Lexington, G. S.	Mont.	4,000,000	40,000	100	*	.....	.....	.....	609,000	Jan	1890	2.00
98	Little Chief, S. L.	Colo..	10,000,000	200,000	50	*	.....	.....	.....	820,000	Dec..	1890	.05
99	Little Rule, S.	Colo..	500,000	500,000	1	.....	.....	.....	.....	220,000	Dec..	1891	.02
100	Maid of Erin	Colo..	3,000,000	600,000	5	.....	.....	.....	.....	557,757	April	1892	.25
101	Mammoth, S. L. C.	Utah	10,000,000	400,000	250	110,000	....	1882	.25	1,040,000	Dec..	1891	.10
102	Martin White, S.	Nev.	10,000,000	100,000	100	1,275,000	Jan..	1892	.25	140,000	Dec..	1886	.25
103	Mary Murphy, S. G.	Colo..	350,000	3,500	101	*	.....	.....	.....	175,000	May..	1888	5.00
104	Matchless, S. L.	Colo..	500,000	500,000	1	*	.....	.....	.....	15.000	Feb...	1890	.00½
105	Maxfield	Utah.	3,000,000	300,000	10	.....	.....	.....	.....	117,000	April	1892	.03
106	Mayflower, D. gravel	Cal..	1,000,000	100,000	10	.....	.....	.....	.....	100,000	Dec..	1892	.25
107	May Mazeppa, S. L.	Colo..	1,000,000	100,000	1	*	.....	.....	.....	265,000	Oct..	1891	.03½
108	Minas Prietas, G. S.	Mex..	1,000,000	40,000	25	420,000	April	1886	1.00	350,000	Dec..	1890	.50
109	Minnesota, C.	Mich..	5,000,000	1,000,000	5	.....	.....	.....	.....	1,820,000	Mar.	1876	.....
110	Mollie Gibson, S.	Colo..	5,000,000	1,000,000	5	.....	.....	.....	.....	3,150,000	Mar	1893	.15
111	Monitor, G.	S.Dak	2,500,000	250,000	10	.....	.....	.....	.....	45,000	Oct.	1890	.03
112	Mono, G.	Cal.	5,000,000	50,000	100	760,000	Sept.	1890	.25	12,500	Mar	1886	.25
113	Montana, Lt., G. S.	Mont.	3,300,000	660,000	5	*	.....	.....	.....	2,619,075	June.	1891	12½
114	Morning Star, S. L.	Colo..	1,000,000	100,000	10	.....	.....	.....	.....	925,000	April	1891	.25
115	Morning Star Drift, G	Cal..	240,000	2,400	100	.....	.....	.....	.....	111,800	Dec...	1892	3.00
116	Moulton, S. G.	Mont.	2,000,000	400,000	5	*	.....	.....	.....	410,000	Nov.	1892	.07½
117	Mt. Diablo, S.	Nev.	5,000,000	50,000	100	137,500	June	1880	2.00	210,000	July.	1891	.20
118	Napa, Q.	Cal..	700,000	100,000	7	.....	.....	.....	.....	520,000	Jan..	1893	.20
119	Navajo, G. S.	Nev..	10,000,000	100,000	100	520,000	May.	1891	20	229,950	April	1889	.10
120	Newton	Cal...	10,000,000	100,000	100	.....	.....	.....	.....	10,000	May..	1891	.05
121	New California, G.	Colo..	800,000	160,000	5	*	.....	.....	.....	45,800	May..	1890	.12½
122	New Gunton, S.	Colo..	550,000	110,000	5	.....	.....	.....	.....	1,877,500	April	1892	.75
123	North Banner Con.	Cal..	1,000,000	100,000	10	.....	.....	.....	.....	20,000	July..	1891	.05
124	North Commonw'th	Nev..	10,000,000	100,000	10	.....	.....	.....	.....	25,000	June.	1891	.25
125	N. Hoover Hill, G. S.	N. C	300,000	120,000	2½	*	.....	.....	.....	30,000	Dec..	1885	.06½
126	North Belle Isle, S.	Nev..	10,000,000	100,000	100	474,689	Nov.	1892	.10	230,000	May	1888	.50
127	North Star, G.	Cal..	1,000,000	100,000	10	.....	.....	.....	.....	350,000	Dec	1892	.50
128	Omaha Cons., G.	Cal...	2,400,000	24,000	100	.....	.....	.....	.....	30,000	May..	1892	.15
129	Ontario, S. L.	Utah	15,000,000	150,000	100	.....	.....	.....	.....	13,175,000	Oct..	1892	.50
130	Ophir, G. S.	Nev..	10,000,000	100,000	100	4,210,640	April	1890	.50	1,595,800	Jan..	1880	1.00
131	Original, S. C.	Mont.	1,500,000	60,000	25	*	.....	.....	.....	138,000	Jan..	1889	.05
132	Oro, S. L. G.	Colo..	500,000	100,000	5	.....	.....	.....	.....	95,000	July	1890	.20
133	Osceola, C.	Mich..	1,250,000	50,000	25	480,000	April	1876	1.60	1,697,500	Dec.	1892	1.00
134	Pacific Coast, S.	Cal...	1,500,000	15,000	100	.....	.....	.....	.....	360,000	Dec.	1892	1.00
135	Parrot, C.	Mont.	1,800,000	180,000	10	.....	.....	.....	.....	1,405,385	Dec.	1892	.10
136	Petro	Utah.	10,000,000	10,000	100	.....	.....	.....	.....	17,500	July.	1891	.75
137	Plumas Eureka, G.	Cal...	1,406,250	140,625	10	.....	.....	.....	.....	2,643,559	April	1892	.18
138	Plymouth Con, G.	Cal...	5,000,000	100,000	50	*	.....	.....	.....	2,280,000	Feb.	1888	.40
139	Poorman, G. S.	Idaho	375,000	300,000	125	*	.....	.....	.....	68,280	Sept	1892	.....
140	Quicksilver, pref., Q.	Cal...	4,300,000	43,000	100	.....	.....	.....	.....	1,825,911	June	1891	1.25
141	" com., Q	Cal...	5,700,000	57,000	100	.....	.....	.....	.....	648 867	July.	1882	.40
142	Quincy, C.	Mich..	1,250,000	50,000	25	200,000	Dec..	1862	.....	6,470,000	Feb.	1893	3.00
143	Red Cloud	Idaho	1,000,000	200,000	5	.....	.....	.....	.....	153,000	Dec.	1892	.10
144	Reed National, S. G.	Colo..	500,000	500,000	1	*	.....	.....	.....	50,000	Dec..	1890	.01
145	Retriever, L.	S.Dak	1,250,000	250,000	5	.....	.....	.....	.....	20,000	Aug.	1891	.03
146	Rialto, G.	Colo..	300,000	300,000	1	*	.....	.....	.....	50,250	April	1892	.01½
147	Richmond, S. L.	Nev.	1,350,000	54,000	25	*	.....	.....	.....	4,346,33?	Aug..	1891	.25
148	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar.	1886	5.	99,785	Feb..	1880	.50
149	Robinson Con., S. L.	Colo..	10,000,000	200,000	50	*	.....	.....	.....	585,000	Mar	1886	.05
150	Running Lode, G.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....	36,000	May	1892	00 1-10
151	Savage, S.	Nev.	11,200,000	112,000	100	6,772,000	Feb..	1892	.50	4,460,000	June	1869	3.00
152	Sheridan, S. G.	Colo..	300,000	3,000	100	*	.....	.....	.....	300,000	Oct..	1891	2.50
153	Shoshone, G.	Idaho	150,000	150,000	1	.....	.....	.....	.....	7,500	April	1883	.01
154	Sierra Buttes, G.	Cal...	2,225,000	122,500	10	.....	.....	.....	.....	1,529,307	Oct.	1892	.18
155	Sierra Nevada, S. G.	Nev..	10,000,000	100,000	100	6,411,910	June	1892	.25	102,000	Jan..	1871	1.00
156	Sierra Nevada, S. L.	Idaho	1,000,000	1,000,000	1	*	.....	.....	.....	40,000	May..	1889	.02
157	Silent Friend	Colo..	500,000	500,000	1	.....	.....	.....	.....	60,000	Aug..	1891	.02½
158	Silver Cord, S. L. G.	Colo..	4,500,000	450,000	10	.....	.....	.....	.....	265,000	April	1889	.10
159	Silver King, S.	Ariz.	10,000,000	100,000	100	130,000	Nov.	1890	.30	1,950,000	July	1887	.25
160	Silver Mg. of L. V., S. L.	N. M..	500,000	500,000	1	.....	.....	.....	.....	300,000	Dec..	1891	4.05
161	Slide	Colo..	500,000	5,000	100	.....	.....	.....	.....	20,000	Nov..	1891	4.00
162	Small Hopes Con., S.	Colo..	5,000,000	250,000	20	*	.....	.....	.....	32,000,000	Nov..	1892	.15
163	Spring Valley, G.	Cal...	200,000	200,000	1	50,000	Oct.	5??	.25	50,000	Jan..	1881	.25
164	Standard, G. S.	Cal...	10,000,000	100,000	100	100,000	June	89	.50	3,655,000	Mar..	1892	.10
165	Stormont, S.	Utah.	500,000	500,000	1	*	.....	.....	.....	155,000	Nov	1881	.05
166	St. Joseph, L.	Mo..	1,500,000	150,000	10	*	.....	.....	.....	1,974,000	Dec..	1891	.02
167	Swansea, G. S.	Colo..	600,000	60,000	10	.....	.....	.....	.....	27,000	Mar.	1893	.10
168	Tamarack, C.	Mich..	1,250,000	50,000	25	520,000	Aug.	86	3.00	3,160,000	Oct.	1892	.00
169	Teal & Poe	N. M..	150,000	150,000	1	.....	.....	.....	.....	9,000	Nov.	1891	.01½
170	Tombstone, G. & L.	Ariz..	12,500,000	500,000	25	*	.....	.....	.....	1,250,000	April	1882	.10
171	United Verde, C.	Ariz.	3,000,000	300,000	10	*	.....	.....	.....	207,500	Jan..	1892	.10
172	Viola Lt., S. L.	Idaho	750,000	150,000	5	.....	.....	.....	.....	337,500	Nov.	1888	.37½
173	Ward Con., S.	Colo..	2,000,000	200,000	10	.....	.....	.....	.....	20.000	Dec.	1889	.05
174	Woodside, S. L.	Utah	100,000	100,000	10	.....	.....	.....	.....	25.000	Oct..	1888	.25
175	W. Y. O. D.	Cal..	30,000	15,000	4	22,500	May.	1891	.10	42,000	Dec.	1892	.10
176	Yankee Girl, S.	Colo.	1,300,000	260,000	5	.....	.....	.....	.....	1,406,000	April	1891	1.50
177	Yellow Jacket, G. S.	Nev	12,000,000	120,000	100	5,808,000	Sept	1892	.25	2,184,000	Aug.	1871	1.50
178	Yosemite No. 2	Utah.	1,000,000	100,000	10	.....	.....	.....	.....	25,000	Oct..	1891	.05
179	Young America, G.	Cal..	.....	.....	...	.....	.....	.....	.....	175,000	Jan..	1884	1.00

NON DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares No.	Par	Assessments. Total levied	Date and am't of last.		
55	Denver City, S.	Colo..	5,000,000	500,00	11	*	.....	.....	.....
56	Denver Gold, G.	Colo..	300,000	60,000	5	.....	.....	.....	.....
57	Dickens-Custer, S.	Idaho	2,100,000	420,000	5	.....	.....	.....	.....
58	Durango, G.	Colo..	500,000	500,000	1	*	.....	.....	.....
59	Eastern Dev. Co., Lt	N. S..	1,500,000	150,000	10	990,000	Mar.	1886	1.00
60	El Dorado, G.	Cal...	1,000,000	250,000	4	*	.....	.....	.....
61	El Talento, G.	U.S.C.	1,000,000	500,000	2	.....	.....	.....	.....
62	Emma, S	Utah.	625,000	500,000	125	.....	.....	.....	.....
63	Emmons, S. L.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
64	Empire, S.	Utah.	10,000,000	100,000	100	.....	.....	.....	.....
65	Eureka Tunnel, S. L.	Nev..	10,000,000	100,000	100	*	.....	.....	.....
66	Exchequer, S. G.	Nev...	10,000,000	100,000	100	940,000	Jan..	1892	.25
67	Found Treasure, G. S.	Nev...	10,000,000	100,000	100	130,500	Jan..	1892	.50
68	Gogebic I. Syn., L.	Wis..	5,600,000	200,000	25	.....	.....	.....	.....
69	Gold Bank, G. S.	Colo.	250,000	250,000	1	*	.....	.....	.....
70	Gold Cup, S.	Colo..	500,000	500,000	1	*	.....	.....	.....
71	Golden Era, S.	Mont.	2,000,000	200,000	10	*	.....	.....	.....
72	Gold Flat, G.	Cal...	1,000,000	100,000	10	5,000	Mar..	1892	.05
73	Gold King, G.	Colo..	1,650,000	350,000	5	.....	.....	.....	.....
74	Gold Rock, G.	Cal...	1,000,000	500,000	2	.....	.....	.....	.....
75	Golden Feather Con., G	Cal...	900,000	180,000	5	.....	.....	.....	.....
76	Goodahaw, G.	Cal...	10,000,000	100,000	100	*	.....	.....	.....
77	Goodyear G. S. L.	Mont.	1,000,000	200,000	5	13,000	Feb..	1892	.01
78	Grand Belt, C	Tex..	12,000,000	120,000	100	.....	.....	.....	.....
79	Grand Canyon, S.	Ariz..	375,000	75,000	5	.....	.....	.....	.....
80	Grand Duke, S.	Colo..	800,000	80,000	10	.....	.....	.....	.....
81	Gregory Con., G.	Mont.	3,000,000	300,000	10	.....	.....	.....	.....
82	Harlem M. & M. Co., G.	Cal...	1,000,000	200,000	5	.....	.....	.....	.....
83	Hartery Con., G.	Cal...	1,000,000	100,000	10	22,000	Oct..	1890	.05
84	Hartshorn, G. S. L.	S.Dak	1,250,000	250,000	5	8,750	Sept.	1891	.00½
85	Head Cent. & Tr., S. G.	Ariz..	10,000,000	100,000	100	16,981	Mar..	1892	.03
86	Hector, G.	Cal...	1,500,000	300,000	10	45,000	Jan..	1889	.15
87	Highland, C.	Mich..	500,000	25,000	20	.....	.....	.....	.....
88	Himalaya, G. S. L.	Utah.	1,800,000	180,000	10	12,800	Oct	1892	.00½
89	Holywood	Cal...	200,000	100,000	2	.....	.....	.....	.....
90	Hortense, S.	Colo..	2,000,000	200,000	10	.....	.....	.....	.....
91	Huron, C.	Mich..	1,000,000	40,000	25	280,000	May	1887	3.00
92	Idaho, G. S.	Idaho	1,250,000	250,000	5	.....	.....	.....	.....
93	Inez, S. L.	Idaho	1,000,000	1,000,000	1	.....	.....	.....	.....
94	Ingalls, G.	Colo..	100,000	20,000	5	.....	.....	.....	.....
95	Ironton, I.	Wis..	1,000,000	40,000	25	.....	.....	.....	.....
96	Iroquois, C.	Mich..	1,250,000	50,000	25	.....	.....	.....	.....
97	Kentuck Con.	Nev..	10,500,000	105,000	00	57,750	July.	1892	.10
98	J. D. Reymert, S.	Ariz..	10,000,000	100,000	100	.....	.....	.....	.....
99	Julia Con., G. S.	Nev...	11,000,000	110,000	100	1,463,000	Jan..	1889	.10
100	Justice, G. S. C.	Colo.	500,000	500,000	1	*	.....	.....	.....
101	Lacrosse, G.	Colo..	1,000,000	100,000	10	*	.....	.....	.....
102	La Cumbre, G. S.	Mex..	150,000	3,000	50	*	.....	.....	.....
103	Lee Basin, S.	Colo..	5,000,000	500,000	10	*	.....	.....	.....
104	Little Josephine, S.	Colo..	250,000	50,000	5	.....	.....	.....	.....
105	Lone star Cons., G.	Cal...	500,000	500,000	1	10,000	April	1892	.00½
106	Lynx Creek, G.	Ariz..	237,500	147,500	5	.....	.....	.....	.....
107	Madeleine, G. S. L.	Colo..	750,000	50,000	1	4,500	Feb.	1892	.00½
108	Mammoth Gold, G.	Ariz..	245,000	49,000	5	*	.....	.....	.....
109	Mayflower Gravel, G.	Cal...	1,000,000	100,000	10	*	.....	.....	.....
110	Medora, G.	Dak..	250,000	250,000	1	585,000	Mar.	1890	.56
111	Merrimac Con., G. S.	Colo.	5,000,000	500,000	10	.....	.....	.....	.....
112	Mexican, G. S.	Nev...	10,000,000	100,000	100	2,917,560	ct..	1892	.50
113	Michigan, G. S.	Mich..	2,500,000	100,000	25	40,000	Mar.	1892	.....
114	Middle Bar, G.	Cal...	400,000	200,000	2	*	.....	.....	.....
115	Mike & Starr, S. C.	Colo..	1,000,000	200,000	5	*	.....	.....	.....
116	Milwaukee, S.	Mont.	500,000	500,000	1	*	.....	.....	.....
117	Minah Cons.	Mont.	1,250,000	250,000	5	.....	.....	.....	.....
118	Modoc Chief, L. S. G.	Idaho	1,000,000	200,000	5	5,000	Jan..	1892	.00½
119	Monitor, G.	Colo..	100,000	100,000	1	12,500	May.	1891	.0
120	Montreal, G. S. L.	Utah.	750,000	150,000	5	4,500	Feb..	1892	.00½
121	Mountain Ledge, G.	Cal...	500,000	100,000	5	.....	.....	.....	.....
122	Mount McClellan	Colo..	1,500,000	300,000	5	.....	.....	.....	.....
123	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	.....	.....	.....	.....
124	Native, C.	Mich..	1,000,000	40,000	25	.....	.....	.....	.....
125	Neath, G.	Colo..	1,000,000	100,000	10	.....	.....	.....	.....
126	Nelson	Cal...	50,000	10,000	5	.....	.....	.....	.....
127	Nevada Queen, S.	Nev...	10,000,000	100,000	100	200,000	Oct..	1889	.25
128	New Germany, G.	N. S.	100,000	100,000	1	*	.....	.....	.....
129	New Gold Hill	N. C	1,750,000	350,000	5	.....	.....	.....	.....
130	New Pittsburg, S. L.	Colo..	2,000,000	200,000	10	*	.....	.....	.....
131	New Queen Gold, S.	Colo..	800,000	160,000	5	.....	.....	.....	.....
132	North Standard, G.	Cal...	10,000,000	100,000	100	20,000	Nov	.....	.....
133	Occidental Con., G. S.	.....	10,000,000	100,000	100	245,000	April	1892	.2?
134	Oneida Chief, G.	Cal...	500,000	125,000	100	*	.....	.....	.....
135	Oriental & Miller, S.	Nev..	10,000,000	400,000	100	.....	.....	.....	.....
136	Original Keystone, S.	Nev..	10,000,000	100,000	100	250,000	Mar..	1892	.10
137	Osceola, G.	Nev...	5,000,000	500,000	10	*	.....	.....	.....
138	Overman, G. S.	Nev...	11,520,000	115,200	100	4,001,340	May.	1892	.10
139	Park, S.	Utah.	2,000,000	200,000	10	.....	.....	.....	.....
140	Parker, G.	N. C.	750,000	180,000	...	.....	.....	.....	.....
141	Pay Rock, S.	Colo..	1,000,000	200,000	5	.....	.....	.....	.....
142	Peer, S.	Ariz.	10,000,000	100,000	100	190,000	Feb..	1892	.10
143	Peerless, S.	Ariz.	10,000,000	100,000	100	405,000	Oct...	1890	.15
144	Pennsylva'a Cons., G	Cal...	5,150,000	515,000	10	36,050	Feb..	1892	.10
145	Phœnix, G.	Ariz..	500,000	500,000	1	*	.....	.....	.....
146	Phœnix Lead, S. L.	Colo..	100,000	100,000	1	*	.....	.....	.....
147	Pilgrim, G.	Cal...	600,000	300,000	2	*	.....	.....	.....
148	**Pioche M. & R., S. G. L.	Utah.	20,000,000	2,000,000	10	.....	.....	.....	.....
149	Poorman, Ltd., S. L.	Idaho	250,000	50,000	5	.....	.....	.....	.....
150	Potosi, S.	Nev...	11,200,000	112,000	100	1,573,000	Mar..	1890	.50
151	Proustite, S.	Idaho	250,000	250,000	1	*	.....	.....	.....
152	Puritan, S. G.	Colo..	1,500,000	150,000	10	*	.....	.....	.....
153	Quincy, C.	Colo..	3,000,000	300,000	10	.....	.....	.....	.....
154	Rainbow, G.	S.Dak	1,250,000	250,000	5	4.250	July.	1892	.00½
155	Rappahannock, G. S.	.....	250,000	250,000	1	*	.....	.....	.....
156	Red Elephant, S.	Colo..	500,000	500,000	1	*	.....	.....	.....
157	Red Mountain, S.	Colo..	300,000	60,000	5	.....	.....	.....	.....
158	Ropes, G. S.	Mich..	2,000,000	80,000	25	167,200	Feb.	1891	.50
159	Ruby & Dun., S. L. G.	Nev.	25,300	506	50	.....	.....	.....	.....
160	Russell, G.	N. C.	1,500,000	300,000	5	.....	.....	.....	.....
161	Sampson, G. S. L.	Utah.	10,000,000	100,000	100	288,15?	July.	1888	1.08
162	Seal of Nevada, G. S.	Nev..	5,000,000	100,000	50	.....	.....	.....	.....
163	Silver Age, S. L. G.	Colo..	2,000,000	200,000	10	*	.....	.....	.....
164	Silver Bell, S.	Ariz..	850,000	170,000	5	.....	.....	.....	.....
165	Silver King, S.	Cal..	2,000,000	400,000	5	.....	.....	.....	.....
166	Silver Queen, C.	Ariz..	5,000,000	200,000	25	*	.....	.....	.....
167	Silverton, S.	Colo..	300,000	60,000	5	.....	.....	..

COAL AND COAL RAILROAD STOCKS.

NAMES OF STOCKS.	March 4		March 6.		March 7.		March 8.		March 9.		March 10		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Am Coal	.....	.....	...	91	90¾	.....	.....	.....	.....	.....	93	.....	300
Balt. & Ohio	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buff., R. P.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Iron	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ches. & Ohio	23¼	23⅛	23⅜	22⅞	23	22¾	23⅜	22⅞	23	22¾	22¾	22⅛	7,418
do. 1st pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do 2d pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. C. & I	21¼	.....	22	21	.....	.....	22	.....	22¼	.....	.....	.....	870
Col. Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado Fuel	69	68¾	68⅞	68½	68	67¾	.....	.....	68	67⅝	68	67	2,922
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col., H V.& Tol.	.....	.....	28½	28	27¾	27½	29	.....	28½	.....	28¾	28	1,300
do. pfd	.....	.....	70	.....	.....	.....	.....	.....	.....	.....	.....	.....	121
Col. & H. Coal	19½	.....	19	18⅝	.....	.....	19½	.....	.....	.....	19¼	18¼	1,300
do. pfd	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & Hud. C	129¼	129	128⅛	127½	127½	126⅝	128	126¾	127⅜	126½	127½	1 [illegible]	5,042
Del., L. & West.	146⅛	145⅞	145¼	144⅛	145¼	143¾	146	144¼	145¼	144⅛	145⅝	14.⅝	19,606
Hunt. & B.Top.	37½	37	37¾	... ..	.....	.....	37¾	.....	.....	.....	.....	.....	325
do pref	53¾	.....	.....	.....	53¼	51	50½	.....	51	50½	.....	.....	705
Lake Erie&Wes	22	.....	22	21⅝	22	21⅝	22½	.....	21⅝	.....	22½	22	1,370
do. pref.	78	.....	77⅝	77	.....	.....	77½	77	.....	.....	76½	76	1,671
Lehigh C. & N.	51⅞	..	51⅜	51¼	51½	51	51⅞	51⅝	52	.....	.....	.....	914
Lehigh Valley	47	46½	46¾	46⅜	46⅞	46¼	47¾	46⅝	48¼	47¼	.....	.....	11,170
Mahoning Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morris & Essex	.....	.....	.....	.....	.....	.....	163	.....	.....	.....	.....	.....	5
New Cent. Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J. Central	119½	.....	119	118	118⅝	117½	.....	.....	118¼	117	117	116¼	3,108
N. Y., L. & W	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Y., L. E.& W	21½	21⅜	21⅝	21⅜	21¾	21	22	21⅝	21⅝	21¼	21½	21⅜	29,665
do. pref	48½	.....	48	.....	48¾	.....	49¼	.....	48	47⅝	48¼	48	1,180
N.Y., Susq. & W	17½	17¼	17½	17¼	17	16½	.....	.....	18⅛	17¼	17¼	17⅝	3,540
do. pref	67½	.....	.....	.....	65	.....	66	.....	66	.....	69½	66¾	1,500
N. & West	8	.....	.....	.....	.....	.....	7	.....	.....	.....	.....	.....	105
do. pref	.....	.....	32¼	32¼	.....	.....	32¾	32⅜	.....	.....	.....	.....	500
Penn. R. R	53⅜	53	53¼	52⅞	53⅜	52⅞	53⅜	53¼	53⅜	53	.....	.....	7,657
Phil. & Reading	26⅛	25⅝	25⅝	23¾	25¼	23⅝	24⅝	23⅝	23⅜	22⅜	24¼	22½	363,631
Tenn. C. & I	28	27¼	27⅛	26¼	26½	26¼	26¾	26¼	26¾	.....	27	26⅛	7,000
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheel. & L. E.	18½	.....	17⅜	15⅜	16¼	15	16⅜	.....	16¼	.....	17	15⅜	1,966
do. pref	60¾	.....	60	.....	60½	60	.....	.....	60¾	.....	60	59	1,050

Total shares sold, 475,951.

INDUSTRIAL AND TRUST STOCKS

NAME OF STOCKS.	March 4.		March 6.		March 7.		March 8.		March 9.		March 10.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams Express	.....	.....	.....	.....	.....	.....	158	157½	160	.....	.....	.....	135
Am. Cotton Oil.	49⅞	49¼	49½	48¾	49	47¾	49	47¾	48⅝	47⅛	48	46⅝	41,059
do. pref	.....	.....	81¾	80¾	81	80¼	81	.....	80	.....	79½	79	1,559
Am. Dist. Tel	.....	.....	55	.....	.....	.....	.....	.....	.....	.....	.....	.....	300
Am. Express	120	118	.....	.....	118	.....	119	.....	118	117	.....	.....	99
Am. Sugar Ref	126⅝	124⅝	126¾	123¼	122½	116⅝	123⅝	120¾	121½	118½	119¾	117⅜	285,651
do. pref	101¾	101⅛	101½	101	101	100⅝	101⅜	100⅜	101	100	100	99⅜	3,332
Edison E. Ill. Co.	.....	.....	126	.....	124½	122½	.....	.....	122	.....	.....	.....	1,118
Edison Gen El	105½	105	105¾	104¼	105¾	104	105⅝	104½	104¾	104¼	104¼	99½	41,757
Nat. Cord. Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	110	109½	110⅝	108	110	108½	109½	.....	108⅜	108	109	108¼	2 785
do. New	62⅜	61¼	61⅜	59½	60	58⅝	61¼	59½	60⅜	58½	59¼	58¼	47,991
Nat. Lead Co	40	39¼	39¼	37⅝	39	36½	38¾	38	37¼	35	36¾	35	65,117
do. pref	89½	89	87¾	86	86¼	83½	86½	85¾	8 ⅝	8[illegible]	82	80	16,205
Nat. Linseed Oil.	37	.....	36⅞	36¾	36½	36⅜	36⅜	.....	36½	35¾	35½	34⅝	2,420
So. Cotton Oil	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
U. S. Express	65	.....	64	.....	.....	.....	64	62	.....	.....	.....	.....	345
U. S. Rubber	.....	.....	.....	.....	.....	.....	44¼	.....	.....	.....	.....	.....	100
do. pref	.....	.....	.....	.....	94¾	.....	.....	.....	95¼	.....	.....	.....	105
Wells, Fargo Ex	146¾	.....	.....	.....	.....	.....	147	.....	.....	.....	.....	.....	23
Western Union	95½	94½	94⅝	93⅝	95	92⅝	95½	94	95⅛	94⅜	95¼	94⅜	41,693

Total sales, 551,799.

CALIFORNIA.

San Francisco.

NAMES OF STOCKS.	CLOSING QUOTATIONS. March 3	March 4	March 6	March 7.	March 8.	March 9.
Alpha	.....	.....	.....	.....	.....	.....
Alta	.15	...	.15	.20	.15	.15
Belcher	.65	.....	.60	.65	.75	.....
Belle Isle	.....	.....	.....	.....	.05	.06
B. & Belch	1.55	.....	1.50	1.40	1.35	1.55
Bodie	.05	.....	.05	.05	.05	.05
Bulwer	.15	.....	.15	.25	.30	.25
Challar	.40	.....	.50	.60	.50	.60
Com'w'lth	.....	.....	.....	.....	.....	.....
Con.C.&V.	2 50	.....	2.45	2.35	2.30	3.50
Con. Pac.	.....	.....	.....	.....	.....	.....
Crown Pt.	.40	.....	.40	.35	.40	.40
Del Monte	.....	.....	.....	.....	.....	.....
E'rekaCon	.....	.....	.....	.....	.....	.....
G'ld & C'y	.80	.....	.80	.75	.75	.80
Hale & N.	1.10	.....	1.10	1.10	1.05	1 20
M. White	.....	.....	.....	.....	.....	.....
Mexican	1.65	.....	1.60	1.60	1.55	1.75
Mono	.05	.....	.....	.....	.....	.....
Mt. Diablo	.....	.....	.....	.....	.....	.....
Navajo	.....	.....	.....	.....	.....	.....
Nev. Qu'n.	.....	.....	.....	.....	.....	.....
N.B'lleIsle	.....	.....	.....	.....	.....	.....
N. Co'w'th	.....	.....	.....	.....	.....	.....
Ophir	1.90	.....	1.90	1.70	1.70	1.95
Potosi	1.10	.....	1.30	1.30	1.20	1.30
Savage	.80	.....	.80	.75	.70	.75
Sierra Nev	1.15	.....	1.20	1.10	1.05	1.15
Uni'n Con	1.01	.....	.99	.85	.80	.90
Utah	.10	.....	.15	.10	.10	.10
Yel. Jack	.50	.....	.50	.50	.45	.45

COLORADO.

Aspen. March 6.

	Bid.	Asked
Argentum Juniata	$0.65	$0.66
Aspen Contact	1.00	1.10
Aspen Deep Mining	.10	.11
Best Friend	.10	.12
Bi-Metallic	.12	.14
Bushwacker	.20	.23
Delia S.	1.90	2.00
Gold Valley Placer	.....	.15
Little Annie	.07	.10
Mollie Gibson	7.50	8.00
Pontiac	.10	.12
Smuggler	16 50	17.00
St. Joe & Mineral Farm	.11	.13
U. S. Paymaster	.....	.20

Colorado Springs. March 6.

	Bid.	Asked.
Anaconda Gold	.42	.43
Calumet	.08½	.09
Cleopatra	.12	.13
Fanny Rawlins	.22	.23
Gold & Globe	.07½	.08
Gold King	.27	.28
Isabella	.16	17
Jack Pot	.02	.02
Jeff Davis	.02	.04
Lemhi	1.25	..
Manitou Park	...	.10
Matoa	.07	.10
Ophir	.10½	.11
Orphan Bell	.06½	.07
Pearce-Jensen Reduct'n Co.	.06	.07
Pharmacist	.27	.28½
Summit M. & M.	.26	.27
Work	08	.09
World	.04½	.05

Denver.

Prices and sales for the week ending February 18th:

	High.	Low.	Sales.
Anaconda	$0.42½	$0.36	11,400
Amity	.01¾	.01½	4,000
Bangkok-Cora Belle	.02¼	02¼	2,200
Brownlow	.03	.02½	3,700
Clay Co	.01¾	.01½	5,500
Diamond B	.01½	.01¼	2,600
Gettysburg	.06	.04	4,200
Gold Rock	.04¾	.04	2,600
Golden Treasure	.06½	.06¼	500
Justice	.01½	.01½	2,000
Orphan Boy	.02½	.02½	500
Tam O'Shanter	.02½	.02½	500
Work	.09¼	.08½	23,100
Total sales			62,800

Rico. March 6.

Atlantic Cable Cons. M. Co	$0 25
Atlantic Cable guaranteed	.70
Enterprise Mining Co	3 50
Iron Dollar Silver Mines Co	.25
Southern Cons. Treasury Stock	.20
Uncle Ned Co	.35

MARYLAND.

Baltimore. March 9.

COMPANY.	Bid.	Asked.
Balt. & N. C	....	.10
Conrad Hill	....	.02
Cons. Coal	.28	.30
George's Creek Coal.	1.00	1.07@1.08
Howard C. & C	1.10	....
Lake Chrome	....	.05
Silver Valley	.72@.80	.75@.80

MINNESOTA.

Duluth. March 4.

LISTED STOCK.

	Par.	Bid.	Asked
Biwabik M. Iron Co	100	32.00	36.00
Cincinnati Iron Co	25	1.90	2.00
Clark Iron Co	100	.40	1.00
Cosmopolitan Iron Co	....	.50	....
Great Northern Min. Co.	100	8 00	9.25
Kanawha Iron Co	100	2.50	2.60
Keystone Iron Co	....	....	1.00
Lake Superior Iron Co	25	2.50	2.75
Lincoln Iron Co	....	.15	....
Little Mesaba Iron Co	100	4.50	6.00
Mountain Iron Co	100	82.50	95.00
Minneapolis Iron Co	100	.15	....
Mesaba Moun. Iron Co.	100	22.00	25.00
Shaw Iron Co	100	6.50	7.00
Security Land & Exp. Co.	10	22.50	30 00
Washington Iron Co	100	....	1.00

UNLISTED STOCKS.

Allegheny Iron Co	10	.02½	.05
Aurora Iron Co	..	....	.75
Buckeye Iron Co	100	....	2.50
Chicago Iron Co	100	1.50	2.25
Charlestoa Iron Co	100	2.80	3.00
Champion Iron Co	100	.50	.75
Comstock Iron Co	100	.10	....
Columbia Iron Co	100	....	2.75
Camden Iron Co	..	....	.75
Detroit Iron Co	25	.15	....
Dayton Iron Co	100	.15	....
Great Western Mining Co.	100	4.30	....
Horton Mining Co	10	.06	....
Homestead Iron Co	25	.04	.08
Kentucky Iron Co	100	.15	....
Kakina Iron Co	25	....	2.00
Lackawanna Iron Co.	100	.75	.85
McCaskill Mining Co	..	.07	.10
McKinley Iron Co	100	....	28.50
Mesaba Chief Iron Co	100	8.10	....
Mesaba Iron Co	..	....	.85
Myrna Iron Co	10	....	.25
Northern Light Iron Co	100	.10	....
New England Iron Co	100	2.00	....
Ohio Mining Co	100	10.50	12.50
Oneota Iron Co	100	....	.50
Pennsylvania I. & S. Co.	100	.30	.50
Rouchleau Iron Co	100	.80	1.00
Republic Iron Co	25	.55	.75
Red Hematite Iron Co	100	....	2.
Standard Ore Co	25	1.00	3.00
Towanda Iron Co	100	1.75	2.50
Zenith Iron Co	25	1.75	3.00

MISSOURI.

St. Louis. March 7.

Closing quotations:

	Bid.	Asked.
Adams	....	.97½
American & Nettie, Colo	.20	....
Bi-Metallic, Mont	....	7.75
Elizabeth, Mont	.50	.52½
Granite Mountain, Mont	5.00	5.90
Hope	....	3.50
Montrose Pl	.05	....

MONTANA.

Helena.

Prices for the week ending February 18th:

	High.	Low.
Bald Butte (Mont.)	$2.50	$2.10
Benton Group (Neihart), Mont	.25	.20
Combination(Phillipsb'g),Mont	1.50	1 25
Cumberland (Castle), Mont	.25	.15
Elizabeth (Phillipsb'g), Mont	.45	.42½
Florence (Neihart)	.22½	.17½
Helena & Victor, Mont	.80	.65
Iron Mountain(Missoula), Mont	.82½	.75
Poorman (Cœur d'Alene), Idaho	.75	.60
Whitlach Union & MacIntyre	.50	.40

(Special report by F. M. DAVIS.)

PENNSYLVANIA.

Pittsburg. Feb. 15.

	Bid.	Asked.
Bridgewater Gas Co	27.00	40.00
Caartiers Val. Gas	10.00	11.00
Enterprise Mining Co	....	3.00
Hidalgo Mining Co	5.50	6.50
Luster Mining Co	10.00	10.38
Manufacturers' Gas	....	30.000
N. Y. & Clev. G. D	50.00	51 50
Pennsylvania Gas	....	10.25
People's N. G. & P. Co	14.63	....
Philadelphia Co	22.00	22.25
Tuna Oil	....	20 00
Wheeling Gas Co	20.50	21 75
W'house Air Brake Co	138.50	140.00

Philadelphia. March 2.

	Bid.	Asked.
Bloomington C. & C	....	....
Buck Mountain C	....	....
Cambria	72	....
Connellsville Gas Co	....	....
Excelsior B. & S	....	....
Locust Mt. C. & I	....	....
Penn. Salt	104½	....
Penn. Steel	123	....
Penn. Gas Coal	....	....
Royal Gas	....	....
Westmoreland C	70	....

SOUTH DAKOTA.

Deadwood. Mar. 2.

	Bid.	Asked
Deadwood Terra	$1 50	$1.75
Double Standard	.22	.25
Golden Reward	1.40	1.50
Hawkeye	.62	.65
Iron Hill	.12½	.15
Isadora	.25	.30
Mutual	.01¼	.01¾
Ruby Bell	.22	.25
Seg. Iron Hill	.01	.01½
Tornado	.25	.30

Pipe Line Certificates.

Week Ending March 10.

	High.	Low.	Sales.
March 4	....	...	.....
" 6	64¼	....	10,000
" 7	61½	....	2.000
" 8	61⅞	....	5.000
" 9	61¼	...	10,000
" 10	62½	...	2,000
Total sales in barrels			29,000

FOREIGN QUOTATIONS.

London. Feb. 25.

	Highest.	Lowest.
Alaska Treadwell	£2¼	£2
Amador, Cal	1s. 3d.	9d.
American Belle, Colo.	1s. 3d.	9d.
Can. Phosphate, Can	£½	£¼
Colorado, Colo	£⅛	..
De Lamar, Idaho	£17-16	£15-16
Dickens Custer, Idaho	7½d.	4½d.
Eagle Hawk	....	..
Elkhorn, Mont	£15-16	£13-16
Eberhardt, Nev	£¼	..
Emma, Utah	9d.	3d.
Esmeralda, Nev	....	....
Flagstaff, Utah	10½s.	7½s.
Golden Leaf, Mont	....	....
Jay Hawk, Mont	9s. 6d.	8s 6d.
La Luz, Mex	1s.	6d.
La Plata, Colo	1s. 3d.	9d.
Maid of Erin, Colo	£9 16	£7-16
Mammoth Gold, Ariz.	1s. 3d.	9d.
Montana, Mont	3s.	2s. 6d.
Mount McClellan	4s.	3s.
New Consolidated	....	....
New Guston, Colo	14s.	13s.
New Hoover Hill, N.C.	2s. 6d.	....
New Russell, N. C	....	....
New Viola, Idaho	....	....
Old Lout, Colo	....	....
Parker Gold, N. C	....	....
Pittsburg Cons., Nev	2s. 6d.	1s. 6d.
Poorman, Idaho	7s. 9d.	7s. 3d.
Plumas Eureka, Cal.	11s	9s.
Richmond Con., Nev.	£9-16	£7-16
Ruby, Nev	6d.	3d.
Sierra Buttes, Cal	7s.	5s.
" Plumas Eur., Cal.	£9-16	£7-16
Silver King	....	....
United Mexican, Mex.	2s. 6d.	1s. 6d.
Yankee Girl, Colo	2s.	1s.

Paris. Feb. 23.

	Francs.
Belmez, Spain	650.00
Golden River, Cal	130.00
" " parts	30.00
Laurium, Greece	639.00
Lexington, Mont	95.90
" parts	2.25
Nickel, New Caledonia	752.00
Rio Tinto, Spain	391.25
" " oblig	517.00
" " " 2d	512.50
Tharsis, Spain	117.50
Vieille-Montagne, Belgium	521.25

ASSESSMENTS.

COMPANY.	No.	D'l'nqt in office.	Day of sale.	Amt. per sh're.
Andes, Nev	39	Feb 24	Mar. 16	.25
Belcher, Nev	45	Mar. 14	April 4	.50
Best & Bel, Nev.	53	Feb. 14	Mar. 8	.10
Bodie, Cal	15	Mar. 16	Apr. 17	.25
Caledonia, Nev.	45	Mar. 2	Mar. 23	.10
Challenge, Nev.	14	Mar. 16	Apr. 17	.25
Con. St. Gothard, Cal	7	Mar. 17	May 6	.05
Crocker, Nev	13	Feb. 16	Mar. 15	.05
Crown Pt., Nev.	60	Mar. 8	Mar. 18	.01
Dalton, Utah	..	Mar. 1	Mar. 22	.10
Excheq'r, Nev.	35	Mar. 3	Mar 28	.05
El L'p'ido, Mex.	2	....	....	....
Independence, Nev	18	Mar. 6	Mar. 29	.05
Mono, Cal	33	Feb. 16	Mar. 7	.05
Morgan, Cal	16	Mar. 25	Apr. 4	.25
Nevada Q., Nev.	53	Mar. 6	Mar. 30	.10
N. Belle Isle, Nev	22	Feb. 21	Mar. 14	25
Overman, Nev.	66	Mar. 3	Apr. 3	.10
Peer, Ariz	14	Feb. 14	Mar. 30	.25
Peerless	19	Feb. 20	Mar. 22	.05
Silver Hill, Nev	32	Mar. 21	Apr. 21	.05
Teresa, Mex	10	April 1	Apr. 19	.10
Weldon, Nev.	6	Feb. 16	Mar. 14	.05
W. Con. Va. & C., Nev	1	Feb. 23	Mar. 15	.25